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NATAL,

A HISTORY AND DESCRIPTION OF THE COLONY:

INCLUDING ITS

NATURAL FEATURES, PRODUCTIONS, INDUSTRIAL CONDITION AND PROSPECTS.

BENGAL SECRETARIAT LIBRARY.

BY

HENRY BROOKS,

FOR MANY YEARS A RESIDENT THERE.

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LATE SUPERINTENDENT OF EDUCATION IN NATAL.

LONDON:

L. REEVE & CO., 5 HENRIETTA STREET, COVENT GARDEN.

1876.

916.84
B873

LONDON: PRINTED BY
SPOTTISWOODE AND CO., NEW-STREET SQUARE
AND PARLIAMENT STREET

863

Dedicated

TO HIS BROTHER

JAMES RIDER BROOKS

IN TOKEN OF

AFFECTIONATE REGARD

BY

THE AUTHOR.

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PREFACE.

In preparing the following pages of a description of the Colony of Natal the author has been mainly influenced by the desire to produce a readable book which may convey in an easy and pleasant form an exact picture of the existing condition and circumstances of the land; but he has also entertained the hope, that whilst furnishing this sketch in broad outline, he may also be in reality making a first contribution to a permanent history of an important and promising dependency. Although quite aware of the numerous deficiencies and shortcomings of this first contribution, he ventures to plead that these very defects may possibly be made the instrument of their own correction, if they lead to the supply of more extended and exact information in the various departments that have been touched upon in this sketch. The thanks of the author are especially due to various friends who have permitted him to draw upon contributions which they have made to the different branches

of information that have been treated of. Foremost amongst these he has to name Mr. John Sanderson of Durban, Dr. Sutherland the Surveyor-General of the Colony, and the authors of numerous practical papers that have appeared from time to time in a comprehensive and valuable annual published within the Colony by Messrs. Davis and Sons, of Pietermaritzburg, under the designation 'The Natal Almanac, Directory and Register,' which has now reached to its thirteenth volume, having been commenced in 1863. The author has also to speak in terms of acknowledgment and praise, of a very admirable Handbook of South Africa which has been issued quite recently by Messrs. S. W. Silver and Company of London, and which is filled with information upon South African matters. The hand of the editor, who is well known for his pursuit of some branches of scientific research within the Colony, and for his constant interest in the fortunes and progress of his old colleagues and friends, will be sufficiently evident in the portions of the work that most nearly concern those particular branches of study, and his services will receive from the general public such acceptance as they may deserve.

WARTBURG, WESTVILLE, NEAR DURBAN, NATAL:
August 1875.

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NATAL.

CHAPTER I.

GEOGRAPHICAL POSITION AND CHARACTER.

THE British Colony of Natal is situated on the south-eastern coast of Africa, some 800 miles beyond the Cape of Good Hope, and some 7,400 miles from England by the ordinary ocean-route. It is approximately two-thirds of the distance to Bombay, and about 6,000 miles nearer to England than the great eastern ports of Australia. Its coast looks along the 30th parallel of south latitude, directly towards the western shore of Australia, across the intervening stretch of nearly 5,000 miles of the Indian Ocean, being in the same range of latitude as the southern parts of Queensland, but a little nearer to the southern tropic than either New South Wales or New Zealand.

The sea-coast of Natal has a stretch of close upon 150 miles, beginning with the mouth of the relatively small river Umtamvuna, which divides its territory from Independent Kaffraria in latitude 31° 10′ south, and extending north-eastwards to the mouth of the large river Tugela, which separates it from Independent Zulu-land, in latitude 29° 10′ south. But the colony

itself has the form of an irregular diamond or rhomb, with a length of 220 miles from north to south, and a breadth of 120 miles from east to west. The northernmost point of the rhomb touches the Transvaal Territory in the parallel of 27° 20′ south latitude, where it comes within 260 miles of the southern tropic. The entire district thus formed contains 17,000 square miles, or, in round numbers, eleven million acres of land, and is about one-third the size of England.

The northern point of the rhomb, which is thus 220 miles nearer to the tropic than the southern point at the mouth of the river Umtamvune, is, however, not correspondingly hotter, for this geographical reason—it lies upon a high, or mountainous, inland frontier, instead of upon a low sea-shore; and the elevation above the sea effectually compensates for the nearer approach to the tropic. The whole inland frontier, which stretches on the opposite side of the rhomb to the sea-shore, is formed of a continuous range of lofty mountains that attain an elevation of from 6,000 to 10,000 feet above the sea.

The inland mountainous frontier—which thus runs in some measure parallel to the sea-coast, but at a distance of from 120 to 150 miles away from the sea—is a part of a very extended range, which begins within 150 miles of Cape Town, and then stretches on for more than a thousand miles in the direction of the land above Delagoa Bay, and to the confines of the Transvaal Territory. This long mountain-range is, in the same way, approximately parallel to the sea-coast through its entire extent, being nowhere more than 130 miles from the ocean and nowhere nearer to it than 90 miles. The first, or westernmost, part of the range, which is within

100 miles of the Atlantic and St. Helena Bay, is known as the Roggeweld Mountains; its next portion bears the name of the Neuweveld Mountains; the next stretch is the Winterberg; and then come the Zuurberg and the Stormberg. Within 100 miles of the frontier of Natal the range assumes the name of the Dragon's Mountains, or Drakenbergen, which name it retains through the entire inland boundary of the colony. This *range*, however, it must be understood, is properly but the broken edge of the high table-land of the great southern tract of the vast Continent. The mountains look down towards the sea by precipitous steps of many hundred, and in places even thousands of feet, but on the landward side are raised above the general plateau of the land by a comparatively insignificant elevation. This peculiarity, however, cannot be at once distinguished by the eye when the precipitous ledge is looked up at from the seaward side. From that point of view it bears the aspect of a true mountain-chain, and the traveller who ascends one of the passes from that side for the first time discovers with surprise, when he reaches the summit after some hours of hard climbing, that it is a broken step, rather than a ridge, which he has been engaged with, and that it is a barely undulating plain, instead of a descent, that lies before him.

But there is another interesting peculiarity in the character of the portion of this mountain-range that acts as the inland rampart of Natal, which requires particular notice on account of the influence it exerts on the physical conformation of the land. The course of the mountainous ledge is here broken into a zig-zag line of this character ⟨, in which there is a retiring angle, or

bay, *a*, set back from the sea, towards the north-west, and a prominent angle, or projection, *b*, directed out south-eastwards towards the sea. The parts of the range which are concerned in the formation of this projecting point and bay, are about the boldest and loftiest portions of the broken step. The projecting point looks down into the colony in the form of a battlemented rocky rampart which rises 9,000 feet above the sea, and which has acquired for itself, on account of its castellated lines and the grandeur of its dimensions, the characteristic name of the 'Giant's Castle.' A little further to the north another jagged peak, which has been designated Champagne Castle, on account of some bet which was once laid concerning it between two distinguished authorities in the colony, rises 500 feet higher; and near the deepest recess of the retiring angle the mountains are some hundreds of feet higher still, and have there been distinguished by the French missionaries of the original Cape Colony as the 'Mont aux Sources,' because they constitute at that spot the culminating focus of the land-elevation of this part of the African continent, which is really the water-shed of three great systems of rivers—the Tugela and its affluents, which flow down into Natal; the Orange River and Caledon, which pass through Basuto-land to the south-west; and the Wilge River, an upper affluent of the Vaal River, which waters the Transvaal Territory towards the north. From this culminating point the main range of the Drakenberg gradually declines until it is lost in the hilly ridges of the Transvaal about a hundred miles beyond the northernmost point of Natal.

The Colony of Natal occupies so important a place

as the chief seaward gate or inlet of commerce to the neighbouring territories that the mention of its geographical position appropriately demands a brief notice of the relative situation of these adjacent States. The key, or index, of their distribution is the Great Orange River, which runs to the Atlantic almost across the entire table-land of South Africa, having its feeding rivulets from the westerly slopes of the Mont aux Sources, within a hundred and thirty miles of the shores of the Indian Ocean. This river lies to the north, or inland, of the continuous mountain-range which has been described, and there properly forms the natural inland frontier of the Cape Colony at a distance of some 400 miles from the latitude of the Cape of Good Hope. But 600 miles from its mouth the river forks into a northern and a southern branch or affluent, the northern affluent taking the name of the Vaal, or Yellow River, and the southern affluent being distinguished as the Orange River from its very source. Between the fork of these two upper affluents—the Vaal River and the Orange River—is included the stretch of land which constitutes the Orange River Free State, the oldest of the Dutch South African Republics, and which contains 70,000 square miles of territory, with a population of about 20,000 white, and 15,000 black inhabitants. Both systems of rivers here touch the slopes of the Drakenberg, the sources of the Orange River lying behind the Giant's Castle, and the sources of the Vaal River to the north of the Mont aux Sources. From the Mont aux Sources to the northern point of Natal the Drakenberg Range constitutes the boundary-line which divides the colony from the Orange River State. Some 7,000 square miles of the elevated broken

district which lies immediately to the south of the Mont aux Sources and at the inland side of the Giant's Castle, and which was known as Basuto-land until the year 1871, was annexed to the Cape Colony as a province in that year. The Drakenberg Range from the Mont aux Sources to the Giant's Castle, therefore, lies as a dividing frontier between Basuto-land and Natal. Further to the south-west than the Giant's Castle the Drakenberg and the Stormberg separate Independent Kaffraria from the Cape Colony. Independent Kaffraria thus lies as a gap of 200 miles between the Cape Colony and Natal, and is properly a continuation of the seaward slopes of Natal towards the south-west. It contains about 20,000 square miles of land, and is inhabited by the Amapondo, Amagaleka, and Tambookie Kaffir tribes, which have been estimated as numbering about 80,000 individuals. The boundaries of Independent Kaffraria are the Umtamvuna and Umzimkulu Rivers to the north, and the Great Kei River to the south. To the north-east of Natal, beyond the great river Tugela, and in continuation of the seaward slopes in that direction, is Zulu-land, the seat of the still independent Zulu tribes, under the sway of the chief Cetywayo. To the north of the Vaal River, and between it and the great horseshoe bend of the Limpopo, is the Transvaal Territory, the younger of the two Dutch South African Republics, which was founded by Boers, emigrant from the Cape Colony, in 1848. The Transvaal State is considerably larger than the Orange River State, and extends northwards beyond the Vaal River for quite 350 miles, being at its furthest point 100 miles within the tropic, and almost touching there the 22nd parallel of south latitude. On the sea-

ward side the Libombo Mountains divide the Transvaal Territory from Zulu-land and from the Portuguese Eastern African settlements. The New Lydenberg gold district is contained on the Transvaal slopes of these mountains. The South African diamond-fields lie around the junction of the Vaal and Orange Rivers, in Griqua-land West, a district of some 2,500 square miles, which was annexed to the British possessions of South Africa in 1871, and is now estimated to contain about 50,000 European inhabitants.

The territories immediately adjoining Natal are thus—1, Basuto-land, and the Orange River Free State, on the mountainous inland side; 2, Zulu-land and the Transvaal Republic to the north-west and north, beyond the Tugela and Buffalo Rivers; and 3, Independent Kaffraria to the south-west, beyond the Umzimkulu and Umtamvuna Rivers.

The main road to the inland States of South Eastern Africa, which are situated beyond the Drakenberg Mountains, lies through the centre of the Colony of Natal, from its seaport at Durban. The route runs directly in from the coast, and at the distance of fifty-four miles passes through Pietermaritzburg, the capital of the Colony. It then goes on immediately towards the Drakenberg, finally ascending and traversing that frontier mountain-range at Van Reenen's Pass, at a height of 5,500 feet above the sea, and at a distance of 136 miles from the capital.

Bloemfontein, the chief town in the Orange River Territory, is 210 miles beyond the Pass of the Drakenberg. Bloemfontein is also 90 miles from the diamond-fields of Griqua-land, and 680 miles from Cape Town. Potchefstroom, the principal town of the Transvaal Re-

public, is 230 miles from the Pass of the Drakenberg. Pretoria, the second large township in the Transvaal, is 100 miles from Bloemfontein; and Zout-pansberg, the most remote civilized village in the Transvaal, is 260 miles from Pretoria. The Lydenberg gold-fields are 220 miles from Pretoria towards the west.

Although these upland plains of the Orange River and Transvaal States appear to the casual observer to constitute an undulating plateau, the real fact is rather that they form part of a shallow basin, which is surrounded by an elevated rim, rising to heights varying from 5,000 to 10,000 feet above the level of the sea. The rim of this basin conforms more or less to the general line of the sea-coast for a considerable range, lying from 100 to 300 miles from the sea; but towards the Equator it turns inwards and sweeps across the continent, there constituting the southern watershed of the Zambesi. The basin-rim then passes obliquely southwards between the 30th and 25th meridians of east longitude; and, crossing the channel of the Orange River, finally strikes the coast mountain-range of the Stormberg, and so completes an oval saucer-like space, which is nearly 1,000 miles in its longest diameter, and 400 miles in its greatest breadth. The interior of this basin is now drained by the Orange and Limpopo Rivers; but these rivers have to break through the rim of the basin in order to effect the removal of the water to the sea; and they do this, the one on the west, and the other on the east (or, more exactly, south-west and north-east) sides of the great mountain-rim. The surface-inclination towards the interior of this basin-like depression is very gradual—in most places so gradual

that it is overlooked, and the ground is conceived to be a plain rather than a hollow. But outside the basin, and especially on the sea-coast side, the inclination is very abrupt, and frequently so precipitous that, as in the case of Natal, the level of the country drops many thousand feet in a very few miles. The deepest, or lowest, part of the basin is, nevertheless, several hundred feet below the average height of the rim or watershed which surrounds it; and fossilized remains of animals and plants, extensive stretches of sand, and the presence almost everywhere of water-worn pebbles, all point to the probability that the basin was actually at one time an inland sea; while, on the other hand, the dried-up channels of ancient rivers, the waterless beds of lakes, the evidently rapid decrease of lakes that are not yet gone, and the failing of large fountains and springs within the period of historical observation and record, with equal point and force declare that the process of drying-up is still going on, and pertinently suggest that this may be in some measure due to the gradual cutting-out and deepening of the channels of the two great rivers whose function it is to drain the interior country. It is fairly within the sphere of probability that man is at this very time witnessing the last stage of the process of converting a sea into dry land, which was commenced when that sea, full to its brim, began to lift up its floor by successive upheavals, and to pour at such times a deluge of its water out from its interior cavity over the outer rim. In the interior of the basin there are abundant traces of the igneous action by which the rocky floor of the old sea was raised; and all along the sloping descents which intervene between the mountainous edge of the basin and the sea there are equally

obvious marks of floods and water-action upon the grandest scale.

The Colony of Natal itself is distributed into eight distinct counties, of which four lie along the coast; while two are essentially inland or upland; and two midland and intermediate. The coast counties are—Alfred, containing 1,562 square miles; Alexandra and Durban, containing between them 1,734 square miles; and Victoria, comprising the Inanda and Tugela divisions, containing 870 square miles. The midland counties are—Pietermaritzburg, including the Upper Umkomanzi Division, containing 5,000 square miles, and Umvoti, containing 1,421 square miles. The up-country counties are—Weenen, containing 1,980 square miles, and Klip River, including Newcastle Division, containing 3,578 square miles. The coast counties are essentially contrasted with the midland and upland counties, alike in their aspect, their climate, and their agricultural capabilities. They are clothed with evergreens; almost destitute of frost; grow sugar, coffee, and arrowroot, and ripen the pine-apple and banana in the open air; while the higher counties are more of a pastoral character, and possess a climate that will not ripen any of those semi-tropical productions.

The highest land within the colony, however, does not lie altogether along the base of the mountainous frontier. It commences as a subordinate offset, or spur, from the projecting, or salient, point of the Drakenberg, where the battlements of the Giant's Castle are reared, and then shoots off midway to the opposite river-frontier; thus occupying the midland district of the colony with a vast upland, or highland, which is in many places 5,000 and 6,000 feet above the sea. To the

left, or inland, of this central highland there is a shallow depression, or basin, between it and the Drakenberg frontier. To the right of the highland the land subsides rapidly towards the sea; and it does this by means of a series of sinuous fingers, or spurs, which wind and twist about tortuously, but which continuously descend, and which have also continuous ravines and river-beds intervening between them. The gradient of this seaward slope of the central highland is so abrupt that the general range of the land has an elevation of one mile, at a distance of 70 miles from the sea. It follows, as a consequence of this conformation of the surface, that the entire upper district of the colony, comprising 5,500 square miles, or about one third of the whole area, is drained into one river-system; while the remaining two-thirds of the colony, which lie on the seaward slope of the central highland and its continuation towards the south-west, have a drainage system of close upon fifty distinct rivers. The single-river basin to the north contains the two upland counties, Klip River and Weenen, and is properly the basin of the Tugela River, which leaps down from the central angle of the recessed bay of the Drakenberg as a remarkable waterfall, several hundred feet in height, and flows directly across the centre of the basin in an eastward course, dividing the counties of Klip River and Weenen, and gathering to itself affluents from them which are known as the Buffalo, Sunday, Klip, and Sand rivers on the north, or Klip River County, side, and as the Mooi, Bushman, Blaauw Kranz, and Little Tugela, on the south, or Weenen County, side. At a distance of 120 miles from the cataract-source of the main stream, and about 60 miles from the sea, this

system of rivers is collected on the Zulu-land frontier into one channel, which thence runs steeply down to the sea, being cut through a magnificently bold, mountainous ravine the greater part of the way, and forming the natural river-boundary between Zulu-land and Natal the entire distance. This river-frontier of Zulu-land is continued upwards to the northern extremity of the colony, in the Buffalo River, the most northerly affluent of the Tugela. The Klip River County is thus a triangular space, having the central Tugela, the Buffalo River, and the Drakenberg Mountains, for its three sides; and the Weenen County is a triangular space, having the central Tugela, the Mooi River, and the Drakenberg Mountains for its three sides. All these important features of the physical geography of the district may be traced at a glance in the map which is appended to this volume.

Of the coast river-system there are four principal rivers, which flow down from the southern slopes and ravines of the great central highland, or from the stretch of the Drakenberg Mountains which is to the south of Giant's Castle Point, from which the central highland takes its rise. These are—1, The Umvoti, which flows down through the midst of the Umvoti and Victoria Counties; 2, the Umgeni, which descends from the central tract of the highland, passing a few miles to the north of Pietermaritzburg, the capital of the colony, and drawing one of its minor affluents, the Umsunduze, from it, and then becoming the dividing stream between the coast counties of Durban and Victoria, until it enters the sea four miles to the north of the seaport; 3, the Umkomanzi, which descends from the southern slopes of the Giant's Castle, through the midst of the County of

Pietermaritzburg, and then forms the dividing stream between the coast counties of Durban and Alexandra; and 4, the Umzimkulu, which also descends from the Drakenberg further south, and constitutes the Kaffrarian frontier of the colony for the greater part of its course, until it finally, for the last few miles of its descent, becomes the stream which there separates the coast counties of Alexandra and Alfred. These are all large rivers of the second order of magnitude, and mountain-born. The smaller streams which fringe the coast, and which have considerably shorter courses, but which are, nevertheless, of sufficient importance to have distinctive names, and which generally mark by those names the districts through which they run, are, for the several counties, reckoning in each from north to south—

Victoria County (*Tugela*).—Sinkwazi, Nonoti, Umhlutani (*Umvoti*); Umhlali, Tongaati, Umhloti, Umhlanga (*Umgeni*).

Durban County.—Umbilo, Umhlatuzana, and Inner Bay; Umlazi; Umbogintwini, Amanzimtote, Ilovo, Umzimbazi, Umgobaba (*Umkomanzi*).

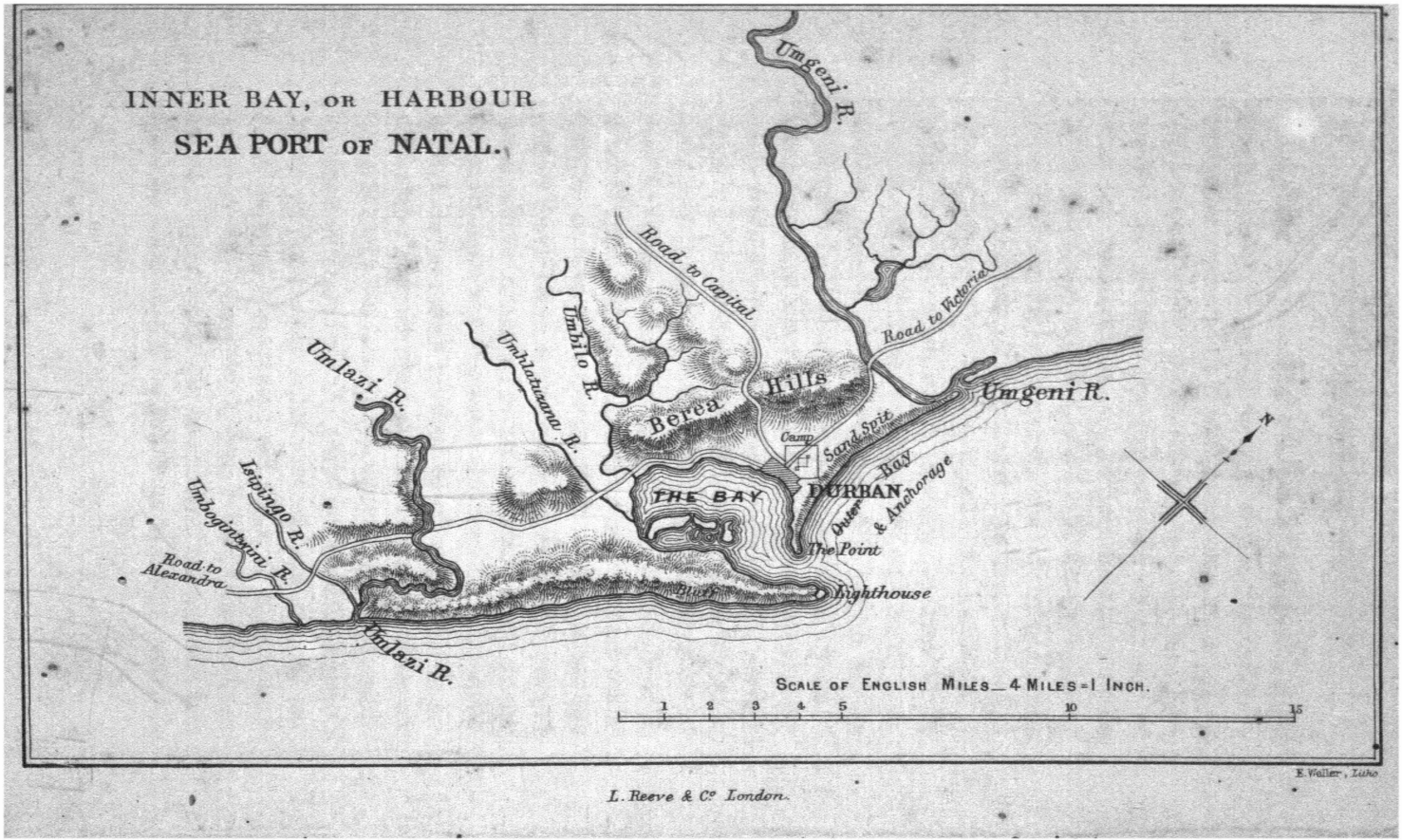
Alexandra County.—Amahlongwana, Amahlongwa; Umpambinyoni, Umzimai, Umzinto, Izazela, Ifafa, Umtwalumi, Uhlungweni, Umzimai, Umzumbi, Emtentwini, Umhlangankulu (*Umzimkulu*).

Alfred County.—Imbango, Iboboye, Izotsha, Umhlangeni; Ivunga, Inkongweni, Ibehlanhlo, Imbezana, Umkobe, Umhlangakulu, Impenjati, Ikandanhlova, Itongazi, Isanhlunhlu, Umtamvuna. Of this series of rivers, those which deserve to be spoken of as of the third order of size, and as touching the slopes of the midlands with their sources, are the Umhloti, the

Umlazi, the Ilovo, the Umtwalume, and the Umtamvuna.

The main road of the coast counties, which runs parallel with the sea-shore a short distance inland, of necessity traverses the entire series of these rivers. It encounters one of them at every third or fourth mile, and it runs continuously up and down, over the intervening ridges, and then through the valleys. The line of the road, indeed, has been fixed by the necessities of the case, being made to strike the rivers where they are most easily passed, that is, far enough from the sea not to be embarrassed by the width of the embouchure or the rise of the tide, and yet near enough not to be unduly troubled by the increasing boldness of their channels. In the case of some of the larger rivers—as in that, for instance, of the Umkomanzi and the Umzimkulu—a very considerable climb has to be made on either side of the river valley before the bounding ridge can be traversed.

It is a remarkable peculiarity of most of these rivers that their mouths are entirely closed with sand-bars, which can be crossed dry-shod on the sea-beach at low tide, and that for some distance inland they are converted by this instrumentality into broad lagoons of stagnant water, made brackish by the sea-waves at high tide. When the water in the lagoon accumulates to a certain point, it breaks a temporary channel through the sand-bar into the sea, but this soon becomes silted up again by the sand brought in by the breakers. It is a curious result of this arrangement that some rivers are more difficult to cross in the dry season than in the wet one. In the dry season the water accumulates gradually in the lagoon, and the depth of the river a little


INNER BAY, OR HARBOUR
SEA PORT OF NATAL.
Umgeni R.
Road to Capital
Road to Victoria
Umbilo R.
Umhlatuzana R.
Umlazi R.
Berea
Hills
Umgeni R.
Camp
Sand Spit
THE BAY
DURBAN
Outer Bay & Anchorage
The Point
Isipingo R.
Umbogintwini R.
Road to Alexandra
Bluff
Lighthouse
Umlazi R.
N
SCALE OF ENGLISH MILES_4 MILES=1 INCH.
1 2 3 4 5 10 15
E. Weller, Luho
L. Reeve & Co London.

further inward is increased; while in the wet season the barrier of sand is broken through by the pressure of the water, and the surface of the river is lowered by its escape. In some of the larger rivers the sand-bar is always partially interrupted—that is to say, the river is wide just within its embouchure, and it is encumbered with silt at its mouth; but there is a narrow, open channel through the sand, which nearly always lies at the southern extremity of the sand-bar.

The harbour of Durban is not much more than an exaggeration of this natural sand-barred lagoon formation, with the permanently-open channel, as will at once appear if the following description is read, with a reference to the accompanying map. The immediate coast in front of the harbour is formed by a bold range of hills, 200 feet high, which terminate abruptly towards the north-east in a magnificent sea-bluff, with a light-house now standing upon its top. Some four miles further inland there is a corresponding range of hills, which is the proper continuation of the coast towards the north, and the bluff-range doubles over, or extends beyond, this inner range, so that a vessel lying in the anchorage of the outer Bay to the north of the light-house point, looks south-westwards down the throat of an open valley included between these ranges of hills. Five miles to the north the large river Umgeni cuts through the inner range and empties itself into the sea; and the throat of the valley lying between the mouth of the Umgeni and the sea-bluff is choked up by a flat deposit of sand, which has been partly brought down by the floods of the Umgeni, and partly thrown up by the currents and breakers of the sea. Along the sea-face this deposit of sand is raised into a natural rampart

a few feet above the waves, which is held together by a leguminous plant with strong, creeping roots. The rampart, however, is not complete. It terminates to the south in a low sand-point, and there leaves a deep, open channel between the point and the bluff, through which the tidal current finds its way into an interior shallow basin, two miles broad and four miles long Two small streams of fresh water, the Umbilo and the Umhlatuzana, empty themselves into this basin; but they are collectively too small to have much influence upon its waters. It is mainly a tidal salt-water basin, with a very strong sea-current flowing alternately out and in with each change of the tide, which has an average rise of about six feet. There are five small islands in the basin, and a considerable part of it is dry at low water, and in places choked with a natural growth of mangrove-trees, and the rest is shallow, excepting immediately at the back of the bluff, and within the sand-point, where deep, permanent channels afford convenient and secure berthing for vessels of considerable size. The entire basin, indeed, is but the unsilted-up part of the sand-flat, which is kept scoured out to a certain extent by the to-and-fro wash of the tide. If man had not interfered it would in all probability have been entirely filled up into sand-flat some day. The seaport town of Durban has been built upon the margin of the basin, under the shelter of the sand-rampart, and it is connected with the ship-channel and a landing-stage within the sand-point by a short line of railway. Boats also can ply at the time of high tide, between the ship-channel and landing-stage and the town. The basin forms, under the circumstances that have been described, a splendid natural harbour, land-

locked, and entirely sheltered from all winds; but, unfortunately, there is a shifting mass of sand deposited as a bar across the entrance of the harbour, between the sand-point and the bluff. There is an average depth at time of high tide in the main channel over this bar of nine feet and a-half of water, but there is a constant conflict waging between the silting-up and the scouring-out operations. A long continuance of heavy sea-winds and of accompanying breakers brings in and piles up increased accumulations of sand, which are then again cleared away during high tides and still fine weather. The depth of water on the bar from this cause varies between eight and seventeen feet, the former being an obstacle to the free and safe entrance of vessels of any size, but the latter affording depth enough for the passage of the mail steamers and of sailing-vessels of 800 and 1,000 tons burthen. With the increasing commerce and trade of the colony it has been found to be an object of the highest importance to devise some means whereby the mouth of the harbour can be kept permanently open to the greater depth, to allow free access to large vessels at all times. Some few years ago Captain Vetch, of the Admiralty service, who was consulted regarding the difficulty by the Colonial Government, suggested that this end might be efficiently accomplished by running out piers into the deep water at either side of the inlet of the harbour beyond the situation of the bar, so as to defend it from the in-roll of the sand, and so as virtually to transfer the actual sea opening of the channel from shallow into deep water. Works for the improvement of the harbour in accordance with this plan were shortly afterwards commenced. Frames of creosoted timber were floated

into position to form the piers, and were then sunk and filled with stones. The pier on the north side, where there is a sandy and gently-inclined bottom, stood well from the first; but on the other side, where there is a very broken and rocky bottom, extending from the bluff itself, the frames were carried away and destroyed by heavy seas whenever these occurred, and it was ultimately found impossible to prosecute Captain Vetch's work there. The north pier has, however, been gradually extended out into the sea, under a modification of the original plan by driving piles into the sand, and by filling in the intervals between with stone, which is brought from quarries on the Umgeni river by a railway constructed for the purpose. It is intended to push on this work until a false channel in the bar, which has been nearly reached, has been closed; and, in the meantime, the whole question of the procedure with the harbour works is being again submitted to the consideration of marine engineers, in the strong assurance that some way will yet be found of converting the inner bay of Natal into a magnificent open sea-harbour at no very ruinous cost. The coast is exposed to very heavy seas when high winds from the south-east and south prevail, or when large rollers set in from those directions. There is, however, excellent anchorage in the outer bay about three miles out to sea; and the prevalent storms occur so nearly parallel to the coast that vessels can generally run out to sea and make a good offing when exceptionally bad weather occurs. Most of the accidents to ships at this outer anchorage have been caused by some incidental embarrassment, or fouling, in getting away from the anchor. An excellent steam-tug, of competent power and sea-going qualities, is now employed in

bringing in vessels from the outer anchorage, and in communicating with them when the bar is impracticable for ships of large burden. All the physical circumstances connected with the capricious changes of the bar are also made the object of close observation and jealous surveillance, under the superintendence of an experienced port-captain, who is always on the spot. It has only recently been ascertained, by actual sounding and trial, that a ridge of hard rock underlies the sand-bar, and no doubt exercises material influence in arresting the sand at that inconvenient spot. There is good reason to anticipate that the removal of portions of this rock by submarine blasting would exercise a beneficial effect upon the condition of the channel.

Before turning from the geography of the coast districts it is necessary to state, in order to complete the sketch of the subject, that until the year 1866 the river Umzimkulu formed the southern boundary of the colony, having beyond it, towards the Cape Colony, a stretch of debateable ground, which had been ceded to the British authorities by the Amapondo chiefs, but which had not, up to that time, been formally occupied. The district was on that account known as No-man's Land. Arrangements were, however, made in the year 1866 for annexing the coast portion and the most fertile part of this strip to Natal, as the new county of Alfred; that name being selected for it in memory of the then recent visit of Prince Alfred (now Duke of Edinburgh) to the South African colonies. The higher part of the district, which lies more directly under the Drakenberg, and which has a comparatively cold climate in winter, was at the same time made over to Adam Kok and the Griquas. The Alfred County

extends 50 miles in from the sea, where its frontier is the Ingeli Mountains, and it has a breadth of about 28 miles at the sea. It is bounded on the south, through its entire depth, by the River Umtamvuna, and on the north by the River Umzimkulu, the old frontier of the colony, for 35 miles. The frontier then runs from a loop of the Umzimkulu River across to the northern extremity of the Ingeli Mountains, leaving a projection of some 150 square miles of Adam Kok's territory thrust in between Alfred County and the Umzimkulu along the Ibisi River, which is an affluent of the Umzimkulu.

The main road which runs inland from the port enters upon an entirely different relation to the rivers for the greater part of its course. It begins at once to mount one of the leading ridges of water-shed separating two of the contiguous larger rivers, namely the Umgeni and the Umlazi; and it pursues this ridge, only meeting with two or three trifling streams, until it has passed through the capital, Pietermaritzburg, and ascended the hills 14 miles beyond. It then, at the distance of 68 miles from the sea, crosses the main stream of the Umgeni, and a few miles further traverses the crest of the central mountain upland which comes down from the Giant's Castle spur, and which has already been alluded to, at a height of nearly 5,000 feet above the sea. Beyond this it dips down into the basin of the Tugela, and crosses, in its further northward course, the several affluents of this great river on their way to their common confluence on the north eastern frontier of the colony. It first passes the Mooi River at a height of 4,200 feet above the sea, and then the Bushman's River at 3,500 feet.

It afterwards crosses the Blaauwkranz, and after that the main stream of the Tugela, at a height of 3,000 feet above the sea, and 137 miles from the port. From the Tugela it again ascends, passing the Sand River affluent of the Klip River 3,600 feet above the sea, and leaving the Sunday River entirely to the right. It then finally climbs the Drakenberg Mountains, at a distance of 188 miles from the port, and enters the Orange River Free State by the Van Reenen Pass of the mountains, at a height of 5,400 feet above the sea. In this latter part of its course through the basin of the Tugela the road mounts some hundreds of feet, and then dips down again to the floor of the valley, with each successive river. It thus becomes a somewhat difficult one to travel over on account of the continued succession of rises and falls, of which some are of a really bold and abrupt character. The entire distance, however, between the sea-port and the mountain frontier is passed by the slow ox-waggon, with a heavy load, in six or seven days, and may be traversed in the saddle by a good horseman in three days; but on account of the hilly nature of the road the rate of travelling, even on horseback, does not exceed six miles an hour.

In consequence of the abrupt and steep gradients of the land the rivers in Natal have a lively, and even a rapid flow almost everywhere, and are encumbered with rapids and cascades at every turn. In very many parts of their course they are veritable mountain-torrents, surging through rock-encumbered channels. There is nothing approaching to a navigable stream throughout the land. Even the coast streams are generally one thousand feet high at a distance of ten

or twelve miles from the sea. During the dry season of the year, which occurs in Natal in the coldest months, the rivers are all easily fordable on horseback. But in the summer season the larger of them are frequently so rapid and deep as to be difficult, and occasionally even dangerous, to pass in this way. All the rivers on the main up-country road are now, however, furnished with bridges, excepting the large stream of the Tugela, and the place of the bridge is there served in times of flood by a punt, which carries both oxen and waggons over the stream. The river Umgeni, near Durban, is also bridged on the coast road; but the rest of the rivers on the coast route have to be forded as they can, the larger of them being occasionally impassable for days in the summer season on account of floods. The steep gradient of the river-channels, however, here renders good service, as on its account the rivers soon subside when the fall of rain has ceased.

The immediate result of the physical conformation of the land, which has been here described, is that the country is everywhere essentially a land of valleys and hills. The only parts that approximate to the character of plains are occasional stretches of alluvial deposit, of limited extent, in the river-valleys and the moor-like tops of the mountains. A considerable proportion of the bolder parts of the colony is bare rock. Along the coast the hills, although of inferior elevation, are as abundant and as much the preponderant rule as in the highlands themselves; and there they are so clothed with luxuriant verdure as to furnish a succession of really beautiful scenery. The coast-road, as it traverses river-valley after river-valley, continually passes through picturesque spots that very closely resemble the dales

of Derbyshire in England; the stream itself rushing down from gorges of sandstone rock, and leaping along through rock-encumbered channels, and the road then climbing from the river by a sinuous course along ledges and slopes covered with evergreens, which in some parts are so beautifully distributed by nature as almost to suggest the park scenery of England. Along the gorges of the rivers, however, the tufted aloes, and the grotesque forms of the succulent-stemmed and leafless euphorbias, upon the rocky banks, with the not infrequent glimpses of waving sugar-cane upon the gentler hills, at once impress upon the eye the fact that the land is one which basks in more abundant sunshine than that of England.

It will be thus understood that the leading characteristic of the physical geography of Natal—which, so to speak, gives the *cast* of the land—is that fingered ridges of the high inland mountain-frontier descend tortuously and twistingly to the sea, and that these ridges are themselves *pinnated* in a similar tortuous way by secondary buttresses that wind down into the intervening valleys; water-courses and rivers being formed in the grooves of the tortuous maze. In the great upland basin of the Tugela the same general arrangement attains, but the primary ridges there descend *convergingly* from the retiring fold of the Drakenberg, instead of being opened out as fingers, yet do not touch at their extremities, so that they leave a continuous central channel, or gap, for the passage of the descending current of the water. In places the higher ridges of the land are swelled out into rounded or flat-topped moors and mountains, and in places the valleys are carved into gorges that seem to have been ploughed and swept at remote periods of

their history by terrific torrents and floods. The Surveyor-General of the colony, Dr. Sutherland, has made some curious estimates, based upon the quantity of mineral matter that is carried down by the larger rivers, of the periods of time that must have been concerned in the formation, by this process, of some of the bolder water-worn ravines that intervene between the severed masses of the Table Mountains, which are frequent features in the rock-scenery of South Africa, and which are merely mighty, untilted slabs of old horizontal sandstone, hundreds of feet thick, supported on buttressed props of older and harder rock, that have been torn asunder and fissured into ravines by earthquake, and then cut down further in the fissured parts by water, while the flat, fragmentary tables of sandstone have remained untouched and unaltered above.

The hills and mountains of the uplands are carved and sculptured upon a larger scale than the hills of the coast, and are for the most part bare of trees, excepting at the kloofs and gorges near their tops, where they are covered with evergreen timber-trees, many of them of large dimensions. Their slopes are, however, for the most part clad with a coarse luxuriant grass. In many places the bolder uplands have very much the character of the higher moors of Devonshire, with, perhaps, the distinguishing feature that they are more luxuriantly clothed with *green* grass in the summer time.

CHAPTER II.

GEOLOGICAL FORMATION.

THE mountains and valleys, whose general form of distribution has thus been sketched, are moulded in the main upon a rocky nucleus of granite, trap, or sandstone in various diversity of physical condition. In most situations these foundation-rocks are covered up and masked by surface-beds of shale, vegetable mould, and other kinds of disintegrated mineral substance. But in very many places they appear in unmitigated ruggedness and boldness, expressing immediately to the eye the leading characteristics of the geological formation of the country. As is commonly the case in mountainous lands, the main backbone of the rocky contour —the rugged frame which determines and marks out the plan and articulation of the physical geography—is formed of igneous or hypogene rocks in the several conditions which are specifically known as granite, gneiss, mica-schist, clay slate, and metamorphic limestone.

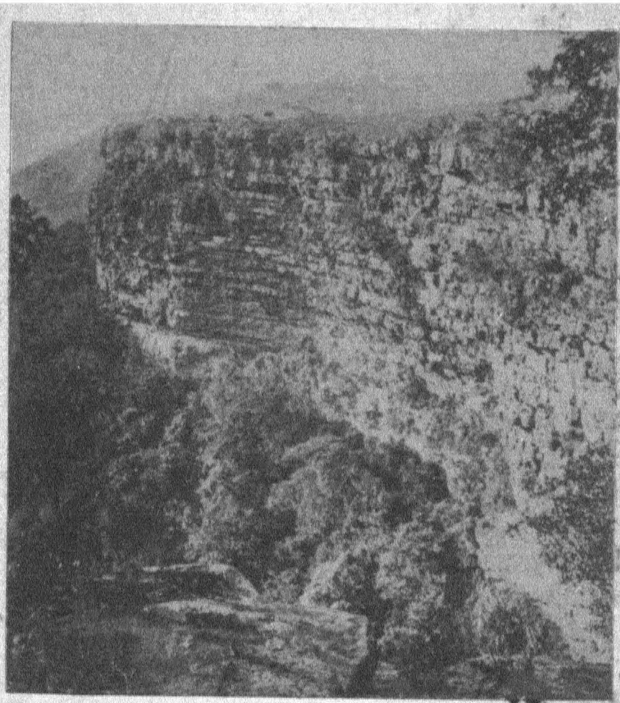
The granite of Natal presents itself, in a form which immediately secures the notice of even the passing observer, on the main line of road half-way between the seaport and the capital. Huge grey blocks of the bare rock, many hundreds of tons in weight, there hang upon

the hill-sides immediately above the road with a threatening aspect, in some situations looking as if they might crash down from their apparently insecure holdings at any instant. These Titanic blocks are all of crystalline granite, and the granite formation can be readily traced from this place through the broken Inanda country that opens out from neighbouring elevations before the eye towards the north, like a vast sea of petrified billows. The channel of the Umgeni River is cut through the granite rock in this rugged wilderness. From the Inanda the granite passes on, in the same general direction, to the gorge of the Tugela River, which traverses it at a distance of some seventy miles from the sea, and beyond that into Zulu-land, where it is lost in the far distance. In the opposite direction from the Inanda it runs down to the sea, which it reaches to the south of the Umpambinyoni River, and then stretches south-westwards some distance along the coast. The main coast-road in Alfred County debouches upon the sea-beach at the mouth of the Umkoba, and then for the next five miles traverses a magnificent stretch of level sea-sand, that is as firm as a road beneath the horses' feet. But at the mouth of the Impenjati this sand-beach disappears, and its place is taken, as far as the river Ikandanhlova, by a sea-platform of bare granite, sculptured by the sea-breakers into a succession of rocks that take the form of knobbed pyramids, sloping steps, and jagged walls, but which allow a path to be picked through the stony maze by horsemen. These rocks are continually washed by the spray of the sea for a considerable distance, and present an immense diversity of colour, which is of incredible brilliancy in strong sunshine, being here black with glittering horn-

blende, and there red and green with ruddy or verdant felspar, and in yet other places white with crystalline quartz, or with incipient decomposition. In some situations broad bands of dark grey, almost jetty, trap are, as it were, *ruled* through the bright colours of the granite floor; and at one part a dyke of dark trap runs straight through the coloured pavement and rises above the broken masses of rock as a parapetted wall. The great axis of granite which thus passes obliquely through the entire breadth of Natal is flanked on either side by gneiss, which is a modification of granite, and by metamorphic rocks that have been secondarily influenced by great heat—such as mica-slate, clay slate and crystalline limestone. Near the Umzimkulu, at a distance of scarcely more than six miles from the sea, there lies upon the southern slope of the granite a vast mass of white, highly crystalline marble, some thirty square miles in extent, and probably not less than 1,200 feet thick. It is for the most part of a pure white colour, and nearly approaches in character to statuary marble; but sometimes it is tinged green, pink, and yellowish brown, and in one place assumes a beautiful grey condition which is capable of taking an excellent polish. It is not distinctly stratified anywhere, but is separated into large masses, which are cleft by laminæ of gneiss and granite, containing a great abundance of quartz. It is perfectly clear that the great central axis of granite has been upreared subsequently to the deposit of the neighbouring beds of rock, as many of these are broken and tilted up by it and changed in their mineral character in its immediate proximity, as they would be under the influence of great heat. In many places the granite and gneiss form the lower foundations upon

which the more lofty mountains are reared. Whenever they rise clear above the surrounding strata and rock, to form hills, these are low prominences of smoothly rounded outline.

The sandstones of Natal have received a very large development, and are of enormous extent. They occur for the most part in thick horizontal beds, alternating with shales of various character. They are found certainly up to the highest part of the subterrace of the Drakenberg, which is known as the little Drakenberg, and which has an elevation of 7,000 feet; and in all probability they reach to the actual outcrop of the higher range. They are also abundant on the coast to the north of the granite and gneiss district. The so-called Table Mountains, flat-topped elevations, which are scattered about in various parts of the midland and upland districts of the colony, are composed of vast horizontal and stratified layers of coarse-grained sandstone, many hundreds of feet thick, reared up on sloping buttresses of unstratified igneous rock—huge, broken slabs of the old pavement that was shattered by the earthquake throes on the upheaval of the granite, which have been lifted in mass upon pedestals of the protruded rock, and left there horizontally fixed in the upper air. The edges of these tabular fragments are bare rock, grooved and scored into horizontal ledges by the action of the weather, and constituting precipitous and generally perpendicular cliffs; but the lower parts of the mountain are formed of vertically sloping ridges and buttresses of unstratified substance, which are for the most part clothed with a garment of thick vegetation. This characteristic arrangement of the bare sandstone table-slabs is very exactly expressed to the eye in Plate IV.,



SANDSTONE WALL FROM THE SHOULDER OF PIETERMARITZBURG, TABLE MOUNTAIN, p. 28.

L. Reeve & Co., London.

which gives a picture of one of the shoulders of the Pietermaritzburg Table Mountain, where it breaks away into the magnificent valley of the Umgeni. The rivers of the coast run continually between picturesque cliffs of reddish sandstone, and not infrequently are cut through the stratified rock to the granite and gneiss beneath, and commonly have their beds encumbered with massive boulders of granite, gneiss, trap-rock, and quartz in inconceivable variety of form. Some of these sandstones, as most probably, the coarse-grained varieties which constitute the Table Mountains, belong to the Devonian and Silurian systems, and some to the younger age of the new red sandstone. Some, again, are associated with alternating layers of gritty shale, and are unquestionably of the carboniferous age. Everywhere the sandstones are fractured and pierced through by dykes of greenstone-trap, a constituent of the rocks which must be more particularly spoken of presently. 'Faults' commonly occur in the shattered beds, one side of the broken mass being raised to a considerably higher level than that at which the other side has remained. But such liftings in mass appear to have been for the most part, if not entirely, effected by exertions of force that were altogether distinct from the introduction of the rock constituting the 'dykes' or veins.

Coal occurs in Natal amongst the carboniferous sandstones in various places, and in considerable abundance. It crops out upon the actual coast of the sea in thin seams near the mouth of the Umhlali. It is also found in thin seams low down in the valley of the Umgeni, and in seams 16 inches thick on the flat ground between the Umhlanga and the Umgeni Rivers, at Boston on an affluent of the Umkomanzi, at York

near the southern boundary of the Umvoti County, on the Mooi River, the Bushman's River, and Blaauwkranz, in the Tugela Valley, under trap, and above all in the Newcastle district of the Klip River County, where it appears in very considerable quantities. The localities of the more important deposits specified by the Surveyor-General in an official report are:— 1. Brak Hoek, seams 14 inches thick. 2. Tiger Kloof, seams 4 feet. 3. Mr. Wilson's neighbourhood, 1 foot to 3 feet. 4. Murray's farm, seam 27 inches. 5. Davels, seam 3½ feet thick, with included layers of shale. 6. Dundee, seams in succession, 8, 51, and 24 inches. 7. Lennox, seams in succession, 12, 15, and 60 inches. 8. Cinderford, seams 12 and 9 inches. The characteristic fossils of the European coal measures, the colossal Stigmaria and Sigillaria, the Lepidodendron, the Palæoniscus and Amblypterus, and the Crinoidea, Producta, Terebratula, Inoceramus, Modiola, Bellerophon, Nautilus, Orthoceras, Megalichthys, and Holoptychius, are entirely unknown in Natal. A few impressions of plants of very moderate size alone have been found. But the coal is nevertheless in many places in very large quantity, and lies on the immediate surface of the ground, being in some situations cut through by the rivers. It is generally included between layers of shale, which are often ripple-marked, and is deposited in horizontal beds, which are frequently impinged upon by igneous rocks, especially trap. It is for the most part poor in bituminous ingredients, but rich in fixed carbon, and is of useful quality. A formal trial was made of it in the year 1868, for steamship purposes, on board Her Majesty's ship 'Hydra.' In this trial it was found that while steam was got up in

60 minutes with 26 cwts. of Cardiff coal, and in 50 minutes with 32 cwts. of West Hartley coal, the steam was got up in 55 minutes with 30 cwts. of Natal coal. With the Natal coal the steam was got up more quickly, involving a somewhat larger consumption, than with the Welsh coal; and it was got up less quickly, but with a somewhat lower consumption, than with the English coal. In steaming on the second grade with the same amount of water raised into steam the consumption of coal per hour was for—

	Pounds.
Cardiff Coal	1,624
West Hartley Coal	2,293
Natal Coal	2,128

The several samples yielded, of ashes—

	Per Cent.
Cardiff Coal	9
West Hartley Coal	8
Natal Coal	16

Of clinker—

	Per Cent
Cardiff Coal	2
West Hartley Coal	5
Natal Coal	7

The Cardiff coal produced very little smoke, of a light brown colour; the West Hartley coal a large quantity of black smoke; the Natal coal a moderate amount of light brown smoke.

The ultimate report of the chief engineer of the 'Hydra' was to the effect that for easy steaming the Natal coal was of nearly equal commercial value to the Cardiff coal, but that when a full supply of steam was required a considerably larger quantity of Natal coal than of Cardiff coal had to be used, in consequence of

the greater amount of earthy ingredients deadening the fires and making it impracticable to keep up the steam without the constant use of the pecker and rake. Less Natal coal than West Hartley coal is needed to generate the same amount of steam, but the steam is kept up more easily with the West Hartley than with the Natal coal. Mr. Etheridge, the experienced geologist, of the Jermyn-street School of Mines, considers that the most abundant form of vegetable impression found upon the sandstones associated with the Natal coal deposits belongs to a species of Glossopteris, apparently identical with the Glossopteris Browniana, which is also abundant in the coal deposits of India, Port Jackson, and South America; and that certain other leaves, seed cases, and stems which are found with the impressions of the Glossopteris are those of a species of Dictyopteris and Phyllotheca, which are also characteristic of those deposits. If this is the case it clearly indicates that the Natal coal belongs to the mesozoic system of modern age, which is familiarly represented in England by the oolitic and cretaceous group of rocks, and which is known as the Jurassic system on the Continent. The plants which are characteristic of these beds are tree-ferns, cycads, zamias, palms, and pines—much more nearly resembling the plants of the same orders in the present day than do those of the older and true coal measures of England. The lignites of the Jurassic and cretaceous orders of formation, as a rule, always contain a higher percentage of water and ash than the older palæozoic coal of the 'far-past' geological age, and in those particulars closely correspond with the specimens of Natal coal which were tested on board the 'Hydra.' Dr.

Sutherland says, in regard to some of the Natal coal, that it is of very good quality, yielding as much as 27 per cent. of volatile matter, and but a comparatively small percentage of ash, and that the enclosing rock-strata show no traces of organic matter, but only pure sandstone, with a slight impregnation of mica. He infers from this that the vegetable matter from which the coal is derived was generally borne aloft by quite clear water, and then very tranquilly deposited, without disturbance enough to mingle together the vegetable substance and the grains of the sand. He also remarks that there can be no doubt that many of the plants remained in their natural position of growth while undergoing conversion into coal, as in places the roots of the plants are distinguishable beneath the clay, while the leaves appear impressed in the silt beds above the carbonaceous seam.

In a paper in which Dr. Sutherland alluded to the characteristics of the coal measures of Natal, in 1868, and in which he endeavoured to show that there was no good reason for the dogma that coal must of necessity be 'palæozoic coal,' of 'regulation' kind, in order to warrant commercial utility and value, he drew attention to the remarks of Sir Charles Lyell on this point, which are contained in the following extract: 'The Virginian coal measures are composed of grits, sandstones, and shales, exactly resembling those of older, or primary, date in America and Europe; and they rival, and even surpass, these in the richness and thickness of the coal-seams—in one of them the main seam being in some places from 30 to 40 feet thick, and composed of pure bituminous coal. On descending a shaft 300 feet deep, in the Blackheath Mines, in Ches-

terfield County, I found myself in a chamber more than 40 feet high, caused by the removal of the coal. The coal is like the finest kinds shipped from Newcastle, and when analysed yields the same proportion of carbon and hydrogen—a fact worthy of notice when we consider that this fuel has been derived from an assemblage of plants very distinct, specifically, and in part generically, from those which have contributed to the formation of the ancient or palæozoic coal.' Mr. Page, in one of his elementary books on geology, alluding to the same topic, also remarks: 'The coals of Southern India, of Borneo, of Labuan, and of the Philippine Islands are now ascertained to be of oolitic age, to which it is also suspected that most of the coal found in China, Japan, and Virginia likewise belong. The coals of Vancouver's Island, and of the Saskatchewan prairies are said to be of cretaceous age, and those of New Zealand and the islands of the Pacific appear to be tertiary, like the lignites of Germany.'

Dr. Sutherland found in one of the seams of the Newcastle coal a fragment of granite, a pound and a-half in weight, imbedded in the coal, under circumstances in which the boulder must have been transported at least 80 miles. This may be taken as a clear proof that, in some cases at least, the materials of the coal-beds were carried great distances before they were finally deposited in their ultimate resting-places.

But the rock which in Natal most nearly approaches to sandstone in abundance and frequency of appearance is greenstone, and trap, in one or other of its Protean forms. Trappæan rocks are generally held to include all the diversities of igneous formation which are not distinctly granitic in their crystalline segegration of the

felspar, mica, and quartz constituents on the one hand, or which are not obviously of recent volcanic origin on the other—the practical point in their diversification being that they incline to the compact felstonic form, which contains 75 per cent. of silex, and very commonly has a metallic ring when struck; or to the greenstone and hornblende form, which has one-third less silex, and a considerably larger proportion of lime, magnesia, and oxide of iron in its composition. It will, of course, be understood that these trappæan rocks are now pretty well known to be merely the more deeply seated portions or 'roots' of old-world volcanoes, whose cones, craters, and streams have been masked, metamorphosed, and destroyed by subsequent action; that granite and trap are essentially one and the same mineral substance, intrinsically arranged and compacted in a different way; and that the greater or less proportion of silica contained in the trappæan rocks is mainly dependent upon the depth at which they have been formed, upon the degree of heat to which they have been exposed during their fusion, and to the abundance of basic flux which may have been supplied to them from contiguous rock-masses while in this molten condition. The felstones, greenstones, and granites are continually found in all countries associated together, and occasionally may be seen even passing into each other in the same continuous mineral mass. But the great distinctive character of the trap series is that it so continually overlies other forms of rock in vast masses which have been obviously supplied from beneath through pipes and fissures in the covered-up substance, and that it so frequently fills the vacuities and interspaces that have been left between other rocks, and sometimes forms

broad plateaus of superficial deposits that extend over the country in a horizontal or very slightly inclined form of distribution for miles. All these trappæan proclivities are illustrated upon the most magnificent scale in Natal. Greenstone is found traversing the substance of every other kind of rock, not even excepting from its intrusive presence the axial and nuclear granite itself, as is shown in the interesting instance of the trap dyke already alluded to as penetrating the granite rocks of the sea-shore, near the mouth of the Impenjati River. It is seen in veins varying from a few inches to many feet in breadth, and in overlying beds occasionally reared into the form and dimensions of mighty mountains. The lofty Zwartkop Mountain, which overhangs Pietermaritzburg towards the north-west, is of this character; and as the Town Hill, which is one of the shoulders of this mountain, is climbed, some of the enormous dykes which have furnished the material of its out-poured summit are seen bared to view in the precipices overhanging the road. In the Karkloof Mountains, which constitute one of the highest parts of the great central highland of the colony, it is again encountered in its grandest scale of development; and in the Drakenbergen themselves it constitutes the loftiest peaks, and the most rugged and the boldest pinnacles and walls. In some places it penetrates, by its intrusive veins, the granites, the gneiss, and the correlative slate-rocks, but respects thick beds of superincumbent sandstone; whilst, again, in other situations, it passes through sandstones of similar character and covers their tops by layers and masses, hundreds of feet thick. There are even instances in which its own compact substance appears to have been repenetrated by younger streams of analogous material.

In the rocky walls of the very splendid Falls of the Umgeni, about sixteen miles north of Pietermaritzburg which are shown in plate viii., three distinct beds of trap rock occur, separated by intervening layers of carbonaceous sandstone and shale. About one mile to the south of the mouth of the Umzimkulu River, just beyond the old southern frontier of the colony, there is a miniature Giant's Causeway, in the form of a platform of columnar basalt, extended out quite into the breakers of the sea. Amygdaloid porphyries not uncommonly occur in the immediate neighbourhood of the intrusion of trap dykes. Agates, of great beauty, and large six-sided prisms of rock-crystal are carried down by the rivers from the edges of trap veins exposed in the higher mountains. It is also worthy of especial note that the best soils in the colony are found in places where the stratified rocks are most broken through by the intrusive eruption of trap. The strata which have been pierced and penetrated by the trap do not seem, however, to have been themselves tilted or disturbed in their inclination by the eruptions that have formed the veins and overlying masses. The molten rock appears to have welled up and flown quietly out like lava passing from the open vent of a volcano. The trap thus infiltrated amongst the other rocks in a molten state has, however, obviously been a fertile cause of metamorphic change in the rocky substances that were in most immediate contiguity to it during its molten condition. As a matter of course, some of the most dangerous rocks of the 'iron-bound' coast are masses of this adamantine rock which have been extruded or scattered upon the sea-shore.

But, perhaps, the most geologically interesting rock-formation in Natal, is one which has been closely studied

by Dr. Sutherland, and which is technically known as the boulder-clay formation, but which also bears the alternative name amongst other geologists of 'the claystone porphyry.' Both names are aptly expressive of its mineral character. The bed consists of a bluish-grey, hardened, argillaceous, or 'clay' mass, containing imbedded fragments of granite, gneiss, graphite, quartz, greenstone, and clay-slate. These fragments are of varying size, from the minute dimensions of sand-grains, up to vast blocks measuring six feet across and weighing from five to ten tons. They are smoothed as if they had been subjected to a certain amount of attrition in a muddy sediment; but they are not rounded like boulders that have been subjected to sea-breakers. The fracture of the rock is not conchoidal, and there is manifest in its substance a rude disposition towards wavy stratification. The general appearance is that of a clay which has been deposited by aqueous action and afterwards metamorphosed by heat, pressure, and chemical action. In places the deposit exhibits unmistakeable 'ripple-markings,' which seem to indicate that the wind, or other force, which agitated the water during the period of the deposit of the clay-matrix, acted at different times in different directions. The thickness of the beds varies considerably from place to place; but in some situations this amounts to as much as 1,200 feet. The clay of the matrix is close and compact, and unfavourable to the transmission of water; and the surface-soil which is associated with the beds is stiff and unfertile, until it has been loosened to a considerable depth and thoroughly worked.

his boulder-bearing clay in Natal, rests generally upon old sandstones, which, in their turn, are based upon

granite and gneiss. Upwards it passes, first into newer shales, and through them into the sandstones and shales which are associated with the coal deposits. The transition is, however, very gradual, without any distinct line of demarcation, and often stretches through a quarter of a mile of debateable ground. This is illustratively seen in the well known 'Town Hill,' immediately above Maritzburg. The only real difference between the shale and the boulder-clay seems to be that in the one the matrix is of uniform homogeneity and fineness, while in the other extraneous fragments of dense rock are 'brecciated' into the matrix. Near the Umpambinyone and Umzinto Rivers on the coast, the boulder-bearing clay passes into beds which very nearly simulate the condition of true slate, but which have their lines of cleavage *in the direction of*, instead of transverse to, the general stratification. There is in this situation, a fine specimen of flag-stone, very closely resembling the Caithness sandstone. Ripple-markings are plentifully developed where the boulder-clay passes into the fine slates and sandstones. The old sandstones, which lie immediately beneath the boulder-clay, have their upper surface in many instances deeply grooved and striated, as if a semiplastic substance containing hard and angular fragments had been passed over it with the exertion of considerable pressure. The 'boulders' imbedded in the clay are all of them of the character of the rocks that are contemporaneous with, or inferior to, the sandstone formations. Fragments of the higher and younger series of rocks never appear. In some notable cases very ponderous rock-fragments are found as much as fifty and sixty miles away from the hill sources from which they must have been primarily derived. The

boulder-clay does not appear to be overlaid with trap in any instance, but it is traversed by trap-veins where its passage into pure shale occurs near Pietermaritzburg.

The boulder-clay of Natal is distributed over a very large extent of ground. It flanks the long range of sandstone hills which runs from the Tugela River frontier of Zulu-land, at a distance of some six or eight miles from the sea, across the Umgeni river, and through the Berea Hills to the mouth of the Umbilo. It also crops out extensively near Pietermaritzburg, and stretches thence, in one direction, over the Umgeni and Umvoti rivers to the Tugela Valley, between Grey Town and the Biggarsberg Hills; and in the other direction over the Umlazi and Umkomanzi Rivers towards the opposite frontier of the colony. In the latter course it continues onwards to the St. John's River, and to the further districts of the Cape, where it has been especially studied, under the name of 'claystone porphyry,' by the distinguished Cape geologist, Mr. Bain, who speaks of it as having been traced from British Kaffraria to the Bokkeveld Mountains, north of the Great Karroo—an extent of at least 600 miles.

Mr. Bain has a notion of his own regarding the nature and history of this very puzzling deposit. He conceives it quite possible that it may have been primarily produced by a stupendous volcano of old date, associated with the basal formation of the Drakenberg, which sent forth its volleys of erupted rock, long ages ago, over the old carboniferous forests for thousands of square miles; and that these volcanically erupted masses were subsequently swept

away to the positions they now occupy in the boulder-clay beds, by the action of water. He looks upon many of the greenstone summits which cap the inland regions of the country as being undisturbed fragments of this old volcanic layer, resting in peace where they were first deposited, out of the reach of aqueous degradation. The name 'claystone porphyry'—so eminently characteristic of the mineral condition of fragments of dense rock imbedded in a secondarily hardened homogeneous matrix—indicates in some measure that the formation has been held by some geologists to have been 'constructed by fire.' This view, however, is obviously incompatible with the well-defined, angular condition in which the imbedded rock-fragments are found. It is scarcely possible to conceive, on looking at the imbedded rock-masses, that they can ever have been exposed to the degrees of heat which are concerned in the preparation of the igneous rocks. Dr. Sutherland maintains that the rock is not of the nature of a true 'porphyry' in this sense, but that it is a brecciated conglomerate, derived mainly from an aqueous deposit, rather than an igneous porphyry, and he supports his opinion by reference to the groovings and ripple-marks, which have been described. He also states that he has himself persistently sought, for years, for traces of the vent through which such a mass of erupted rock could have been thrown, in accordance with Mr. Bain's views, and which he conceives could not possibly have been effected without leaving very manifest marks of so mighty a volcanic disturbance; and that he has failed to find indications of the operation of such a force anywhere. He considers that the abundant ripple-marks, the gradual

transition into the condition of fine shales and sandstones of unquestionably aqueous origin, the rubbed condition of the imbedded fragments, the absence in them of all signs of fire-action or fusion, the scorings and groovings of the subjacent beds of sandstone, and the occasional transport of ponderous blocks to long distances, are all so many concurrent arguments for the conclusion that the constituents of this boulder-clay have been derived from the superficial denudation of the older rocks by aqueous agency, and that it has assumed its existing relations to the other rocky beds with which it is now associated while in the condition of a soft and plastic mass. The finer shales, containing the impress of ripple-marks, were probably formed during periods of approximate repose.

Boulder-clays of a similar character to the deposit in Natal have been observed in various other countries. But, perhaps, the one that has had most attraction drawn to it is that which has been examined in Caernarvonshire, and very ably described by Professor Ramsay, in which the deposit stretches, with a gentle slope, up the valleys of the Snowdon system of mountains as high as 2,300 feet. Professor Ramsay considers that there is only one known agency which is adequate to the production of all the circumstances met with in these boulder-clays. He holds that the transport to long distances of vast, massive blocks of rock, amounting to many tons in weight, the scoring of the subjacent surfaces of sandstone, and the simultaneous deposition of minute sand-grains and large boulders in the same matrix, all indicate that *ice* is the only physical agent that can rationally be credited with the work of having prepared these clays. At

a meeting of the Geological Society of London, in 1870, in which the editor submitted an illustrative selection of a large series of specimens from the boulder-clay of Natal, supplied to him by Dr. Sutherland, Professor Ramsay expressed his opinion that this boulder-bearing formation is of glacial character, and of analogous nature to the great Scandinavian drift; that it is, in fact, virtually a vast moraine of the olden time, formed of the rocky fragments brought down from the surrounding mountains by glacier streams.

The limestones are very much more sparingly represented in Natal than the sandstones. The limestones of the triassic or oolitic system are, indeed, altogether deficient in the colony. The representative of the chalk, which has yet to be spoken of, appears to be in immediate communication with the igneous rocks. There are, however, concretionary masses and comparatively restricted laminæ of limestone found amongst the broken strata of the sandstone beds here and there. In the Tugela Valley there are deposits of nodular limestone containing fragments several hundred tons in weight, and there are also deposits of shell-lime in many places on the sea-beach. And in some situations banks of shells are encountered many feet above the present level of the sea. The presence of crystalline metamorphic marble near the lower valley of the Umzimkulu, it will be remembered, has been already alluded to. Lime, however, as a general rule, is deficient both in the rocky strata and in the soils of the colony.

The beds which are the sole representatives of the cretaceous system, so familiarly known in England, occur on the sea-coast at the extreme southern limit of the

colony, and are of some considerable geological interest, although but of limited extent. Mineralogically, they resemble the green-sand formation. Near the mouth of the Impenjati River, in Alfred County, a considerable pavement of these beds is exposed at low water, and innumerable fossil remains of both plants and animals are then visible in a kind of embossed relief, traced boldly out upon the dark-grey rock. In places the sea-beach is almost entirely composed of fusiform shells (a species of Terebra), cemented together into a flinty mass; but there are tusks and bones of vertebrate animals, and trunks of large trees, mingled with these smaller shells. These fossil-bearing strata extend for some miles along the sea-beach, and they again appear beyond the Umtamvuna, the southern boundary of the colony, and between it and the Umzimba river, where a low sea-cliff is hollowed out by the waves into overhanging caverns. In these caverns the fossils are found both in the walls and floors, and amongst them, in this position, is especially remarkable a frail mussel-shell of gigantic size, the *Inoceramus expansus*. Specimens of this colossal bivalve occur three feet in diameter, and twelve inches in depth. The shell itself of this bivalve is so frail that it is not easy to get fragments of it, of any size, from the beds. But the hinge-mass, with the laminated structure so familiarly known in the Inoceramus of the white chalk of England, is readily removed. Ammonites of considerable size, Trigoniæ, and a univalve shell apparently allied to the Chemnitzia, occur also, amongst the other remains, in considerable abundance. Fossil remnants of a shark and of a turtle have been likewise found. Trunks of large fossil trees are abundant on

this part of the coast, strewn confusedly about, but imbedded in the matrix of the green-sand. Some specimens have been noted 70 feet long and 2 feet in diameter, and many of them have manifestly been bored by the Teredo. Pores and cavities in the vegetable fibre are everywhere infiltrated with silex. Somewhat similar specimens of fossil wood, it may also be remarked, have been observed in some upland districts of the colony. This cretaceous deposit comprises both sand and clay, but it has a very considerable amount of hardness, on account of the calcareous cement with which these are combined. The strata are distributed horizontally, and they do not seem to have been broken or disturbed after their deposit by igneous eruption; they, however, attain in some places an elevation of from 60 to 100 feet above the actual beach. and occasionally contain rolled pebbles of the older rocks. The depth of the strata has not been ascertained.

Iron occurs in Natal in very considerable quantity both in the form of beds and concretions of clay iron ore, and also in that of masses of hæmatite. The shales and subsoil of the ground upon which the city of Pietermaritzburg has been built are filled with irregular masses of ironstone, which have had to be dug out in many places to make room for the gardens of the town. The same ferruginous deposits are met also in the surface rocks and soils of many other parts of the colony. The ores are in some instances so rich that they have been worked into metal for the construction of spear-heads by the rude appliances of the natives, amounting to scarcely more than heating with charcoal fires and pounding with stones. No systematic attempt

has yet been made, however, to turn these iron ores to account by more skilful reductions. But specimens of the ores which have been sent home for examination have shown them to be of good promise. Of two specimens which were examined by the late Mr. Crace Calvert, of the Royal Institution of Manchester, in 1872, one contained 9·09 per cent. of silicate of iron, 13·40 per cent. of silicate of alumina, 76·74 per cent. of oxide of iron (equal to 53·72 per cent. of metallic iron), 0·52 per cent. of sulphur, and a trace of magnesia; and the constitution of the other was silicate of iron 13·48 per cent., silicate of alumina 15·88 per cent., oxide of iron 69·84 per cent. (equal to 48·89 of metallic iron), sulphur 0·10 per cent., and magnesia a trace. Mr. Calvert reported of these ores that the first was a rich ore but troublesome to handle, and likely to yield an inferior iron, owing to the large proportion of sulphur which it contained; but that the second, on account of its very small proportion of sulphur, might be expected to furnish a first-class iron if carefully smelted with quicklime instead of limestone, or with the presence of a small quantity of manganese. These ores were procured from the valley of the Tugela, near Fort Buckingham, at a spot where 'an entire mountain of inexhaustible dimensions' appeared to be entirely composed of masses of specular and magnetic iron ore mingled together, and where the whole country was covered with timber suitable for the production of charcoal for miles around.

Deposits of ores of copper, and even traces of gold, in minute quantity so far as is yet known, occur along the line of country where the axis of granitic igneous rocks comes into communication with the secondary

strata. Where greenstone appears in association with these metalliferous rocks it is of a marked Syenitic character; that is to say, it contains hornblende in the place of mica, and is obviously trap-rock passing into the state of granite. Dr. Sutherland speaks of copper ore being found near the 'Insiswa Mountains,' in the Amaponda Country, just to the south of the granitic axis of Natal, which yields as much as 40 per cent. of metallic copper. The rich copper deposits of Little Namaqua-land, which lies further out in the same direction, and towards the mouth of the Orange River, are well known. There are ores in that district which yield 70 per cent. of metal, and as much as 7,000 tons of ore are now produced in that region every year, worth from 25*l.* to 30*l.* per ton. Samples of gold, amounting to a few ounces, have been procured from the sands of the Umtwalume River in Natal, having obviously been brought down by the water from the sides of the granite which lies in the bold country higher up the stream. The most promising position, however, in which gold has been found in South Africa, is a tract near Lydenberg, at the Transvaal end of the great granite axis towards the north, on the seaward face, which looks down towards Delagoa Bay at a distance of some 150 miles from its coast. A considerable yield of gold has already been realised in that district. Reports of the arrival at Port Elizabeth from it of as much as 140 lbs. of gold, including nuggets of between four and five pounds' weight, and remittances of 1,184 ounces of gold-dust through the Banks of Natal, have recently been announced in the local papers. Four nuggets, amounting collectively to 34 lbs., and of which one weighed individually 15 lbs., were named

in a communication from Cape Town, printed in the *Times* of September 1st, 1875, as having been found in the Lydenberg Fields in one week. There appears also to be another really rich deposit of gold in the high inland region lying beyond the Transvaal Territory, and forming the crest of the watershed between the Limpopo and Zambesi Rivers. In the year 1868 the German explorer, Karl Mauch, in one of his adventurous journeys in this remote district, came upon some very interesting traces of old workings for gold, and also upon reefs of gold-bearing quartz, which he believed to be of considerable promise. A subsequent examination of this region was made by the English traveller and artist, Mr. Thomas Baines, by Sir John Swinburne, and by Mr. Nelson, a Swedish mineralogist. An ingot of pure gold, weighing 28 ounces, procured from this district, was exhibited at a meeting of the Royal Geographical Society in 1871. The auriferous field lies in a vast highland, which intervenes between the Limpopo and Zambesi Rivers, and which is, indeed, a portion of the rim of the great inland basin which was described in the previous chapter. There are gold-bearing reefs on the river Tatin and neighbouring streams, which flow southwards from the high watershed, and which are affluents of the Limpopo. These rivers are not more than 600 miles from the capital of Natal. But there are also gold-bearing reefs on the rivers Chingasora, Kangamatimba, and Zimbo, which flow northwards from the watershed into the Zambesi, and which are some 400 miles further away into the interior. The main axis of this watershed, indeed, seems to be a mass of granite and gneiss, flanked with slate-rocks, and intersected by veins of gold-

bearing quartz. Specimens of quartz from the northern rivers which have been analysed in England yielded from one ounce to eight ounces of gold per ton. At the Tatin, where the quartz has been more extensively tested by practical mining, it was found that the yield was not more than 1½ ounces per ton. In this situation the gold is disseminated in quartz in fine specks, and the quartz occurs in the form of veins, which are contained in chloritic slate, or schist, and which vary suddenly in breadth from a foot-and-a-half to a few inches. The gold is almost, if not entirely, confined to the veins of solid rock, and there are no alluvial deposits of any kind. Heavy and costly machinery for crushing is, therefore, indispensable to its extraction; and this is found to be a serious drawback where the region is so remote and heavy transport so costly. The granite of this mineralogically-interesting region is coarse-grained, consisting of red or brick-coloured felspar, white or black mica, and colourless quartz. It is associated with a form of rock, distinguished by the German mineralogists as granitite, or granulite, which has a laminated distribution of the mica into approximate layers, and a slight inclination to cleavage and which is most probably of a metamorphic rather than of an eruptive character. The gneiss is widely developed and distributed, and seems to be a formation altogether independent of the granite. It is commonly of distinct stratification; and even alternated with beds of hornblende-schist, and in places granite-rock surrounds fragments of it, as if a shell of gneiss had been fractured and broken through by the more purely crystalline rock. The hornblende-schist only occurs in small layers, which are completely enveloped by

gneiss or granulite. Quartz manifests itself in two distinct forms, of which one is compact and amorphous, and the other granular and distinctly crystalline. The amorphous quartz-rock, or quartzite, has in all probability been a stratified rock, subsequently changed to its present condition by pressure and heat, which have managed to efface all traces of the original stratification. This quartz-rock forms the highest mountains of the district, and very commonly lies immediately upon granite. Its hard and indestructible mineral nature has enabled it to resist degrading agencies more powerfully than the chloritic slates and sandstones; hence its abundant presence as elevated ridges. The granular and crystalline variety of the quartz-rock assumes the form of a real sandstone, in which minute half-crystalline quartz-grains lie closely imbedded together without any intermediation of cementing substance. It, too, is unquestionably a metamorphosed rock which has been subjected to subterranean heat and pressure. The chloritic slate is of restricted extent, like the hornblende slate, forming a comparatively narrow belt; but it is in thick plates, and often may be traced passing into hornblende slate. It is commonly included between beds of gneiss, and is, therefore, unquestionably a metamorphic rock. Veins composed of it are of uncertain and changeable dimensions, and the small veins are generally auriferous, while the larger veins rarely, or perhaps never, contain gold. Specular iron shale is in places found in close contiguity to the auriferous quartz—which is not an unusual association—and has most certainly been smelted in the remote districts of the north by the Mashuna tribes. There are deposits of crystalline limestone in some situations in this high region of igneous rocks; but where they occur they

are almost invariably intersected by veins of quartz, and sometimes a large mass of this limestone will contain as much as 50 per cent. of quartz from this cause. Greenstone is of very general occurrence. The broader plains of the country seem to be an immense plateau, or plate, of this rock. Oval masses of greenstone rock continually crop out from a thin superficial sandstone. The plains which are thus constituted are gently undulated everywhere, as if the extended igneous layer had been slightly upheaved in different directions like the broad waves of a gently disturbed sea. The conical hills of the high land are all composed of outbursts of greenstone; and these hills are set closely together, with intermediate valleys of very small dimensions, which are imperfectly supplied with water. The country where they occur is, therefore, almost universally barren and desolate. Small rounded hills of an elevation from 50 to 400 feet are for the most part granitic, and occur in close connection with the great granite axis of upheaval. Wherever these granitic mounts prevail the country is invariably healthy and free from endemic fever.

The most interesting of the old native workings for gold occur close to the Simbo River, which is an affluent of the Imfule, in south latitude 18° 10′, and in east longitude 30° 50′. They lie upon an elevated hill in two distinct quartz-reefs about 500 yards apart. The reefs come out to the surface of the ground for a distance of from 400 to 500 yards, and through this entire length they have been broken up, and the best and richest quartz removed. The poorer rock has been thrown back as refuse, as the working has been carried along the reefs; and the actual reefs are now pretty well covered up and hidden by this refuse. The broken

quartz is scattered about in places 15 or 20 feet deep, and in heaps of various size. The deepest pit, or hole, amongst the workings is not more than 6 or 8 feet deep. There are, however, many such holes, and their bottoms have in most places been filled up with the rejected broken quartz, so that it is not possible to say, without more examination than has yet been given, whether some of them may not go to greater depths. Some certainly go deeper than others, as if their deposits had been found to be the most productive. Trees have grown in some of the holes, but none to any large size. The largest specimens are about 5 inches in diameter. The workings most probably have been in use within a couple of hundred years, and were certainly the production of a tribe called Mashunas, which inhabited this part of the country about that time, but which has since been driven by the more warlike and aggressive Matabili further towards the Zambesi River. These Mashunas are well known to be a friendly, peaceable, ingenious, and industrious people. They make fine iron from magnetic iron ore, grow cotton, fabricate cotton cloth, and in sundry other ways show themselves to be superior to the neighbouring tribes. It appears that these ingenious miners, who, of course, had to perform their work with the rudest implements, first broke the quartz into small pieces, and picked out such gold as they could see on the fractured surfaces. They next made holes in the hard rock about 5 inches deep, and pounded and ground the quartz fragments in these with round boulders, and then washed away the lighter particles with water in a clay or wooden bowl. How they managed to get the large fragments out of the quartz veins, with such rude appliances, in the first instance, it is not possible to say.

The diamond fields of South Africa lie within the great inland basin, towards the south-western part of its rim, and not very far from the place where the Orange River breaks through this on its outward westerly course. The diamond-bearing deposits occur upon the banks of the Vaal River, about 60 miles above its confluence with the Orange River. Attention was first drawn to the presence of the diamond in this region in the year 1868. At the end of 1871 there were 7,000 diggers at work in the field, and several thousand diamonds of various sizes had been found. In 1872 it was estimated that there were 20,000 miners in the fields. In approaching the diamond-yielding district the ordinary form of the greenstone rock is changed into that known as basalt, which protrudes through beds of conglomerate, and amygdaloidal trap. The conglomerate strata contains rounded pebbles of a great diversity of rock, with rotten ironstone amongst them. Garnets, and a blue transparent crystal known as peridot, abound. A distinctly alluvial deposit, containing worn and rounded pebbles, is planted upon the summits of small rounded elevations of basalt, which have wedge-shaped crevices, wide at the top, and narrow below, running down their sides. The alluvial soil forms the proper matrix in which the diamond is imbedded; and this soil, with its included diamonds and pebbles, is in many instances washed down into the lateral crevices. The tops of the basalt mounds are in most instances about 100 feet above the surface of the river. The basalt is of a distinctly hexagonal columnar structure, and gives indication of violent upheaval from beneath. There are generally interstices between the columns, which have been filled

up by the alluvial conglomerate that contains the diamonds. The general condition is that which might have been produced by an extensive conglomerate bed having been disturbed by the upheaval of the basalt, and having been consequently shattered and subsequently drifted away, excepting upon the isolated summits of the basaltic projections, where there has been no other interference than vertical upheaval, and in the lateral crevices which have served to catch and retain portions that were in the act of escaping from the sides of the upreared mounds. As to where the diamonds which are mingled in with the fragmentary rocks of this remarkable conglomerate have come from, nothing whatever is really known. Sir Isaac Newton's shrewd guess, long before the chemical identity of the diamond with pure carbon had been demonstrated, which was based upon the optical fact that inflammable bodies have refractive powers much in excess of their relative densities, and which was to the effect that the diamond 'is probably an unctuous substance coagulated,' will be remembered. Mr. Shepstone, the Secretary for Native Affairs in Natal, believes that the diamonds have really come up from the fumeroles, or subterranean chimneys, which have poured up the basalt that forms the basement of the hills; and he conceives that all these basalt mounds, or koppies, are properly but the funnel-shaped summits of such fumeroles filled up with the drifted conglomerate. He also indulges in a very ingenious and notable scientific fancy as to the possible origin of the sparkling gem. He thinks that carbonic acid, which is known to be liquefied by a pressure of forty atmospheres or 1,400 feet of water, bubbling up through these fumeroles

when they were at the bottom of a deep sea, constituted the 'coagulated unctuous substance' of Newton's generalization, and that the diamonds are, so to speak, crystallized tears of carbonic acid, wept by the fumeroles of the old subaqueous volcanoes. Mr. Shepstone points to the fact that fragments of microscopic water-plants, and splinters of ferruginous quartz are said to be found in the diamond as a strong argument in favour of his view that the diamond is formed under water, and that it is liquid, or a 'coagulated unctuous substance' in its first form; and he holds that the pebbles and various fragmentary minerals with which it is frequently associated are not essential and unvarying concomitants of its presence, but subsequent and accidental additions, diamonds and pebbles having been transported by water, and deposited together in convenient catchment positions.

Very large excavations altogether have been made in these Vaal River diamond-fields—principally at the mining-stations which are known as Dutoitspan, Bultfontein, and Colesberg Kopje—and a very large number of diamonds have been found. Those mines, indeed, have been so assiduously worked that the ground has been literally honeycombed by the excavations, until in many portions all further operations have had to be suspended, notwithstanding the most elaborate devices for propping and shoring. At Colesberg Kopje extensive landslips have occurred, and not very long since it was reported that there was scarcely a hundred yards of the most productive ground free from cracks and fissures. There were instances, however, of miners having there gone as far as ninety feet down in their excavations, and still realising a find. It is quite clear

that on this account the mining for diamonds in these fields has entered upon a new phase of its history. 'A tolerably clear idea of the extent to which this 'honeycomb excavation' of the ground has been carried at Colesberg Kopje mines, and of the engineering works which have consequently had to be extemporised in order to keep the miners from being buried at their work, may be derived from the photographic sketch of the state of affairs, presented to the reader in plate V.

Many of the grandest and most characteristic features of the physical geography and geology of Natal, which have been alluded to in this descriptive sketch, may be seen within an easy ride of Pietermaritzburg. The Zwartkop Mountain, with its overlying masses of greenstone and its trap dykes establishing connection between these and the subterranean region of rocky fusion, immediately overhangs the town towards the north-west, rising above it nearly 3,000 feet. About fifteen miles from the city, towards the east, there is a very charming specimen of the Table Mountain, which is, indeed, visible from the streets of the town, with its horizontal ledges of bare sandstone, and its green buttresses of foliage-clothed rock lighting up in the warm rays of the setting sun into an object of exceeding beauty. From one of the shoulders of this Table Mountain the eye ranges down to the north, for mile after mile, into a deep valley, sprinkled with mimosa thorns, backed in the far purple distance by other Table Mountains of equally distinct and characteristic form, and with a clear, bright thread of shining silver meandering along through the midst of the lowest floor. This is the Umgeni River, coming down from the mountainous gorges of the higher district to

MINES AT THE DIAMOND FIELDS ON THE VAAL RIVER. p. 56.
L. Reeve & Co., London.

VALLEY OF THE UMGENI FROM TABLE MOUNTAIN, p. 57.

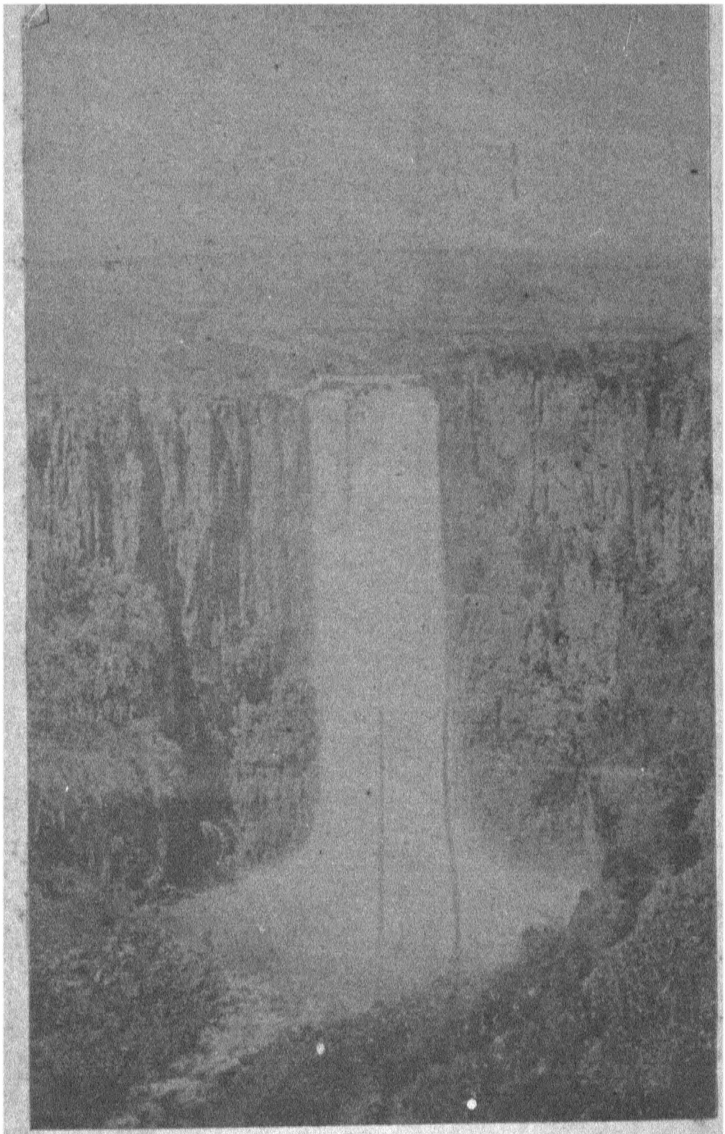
L. Reeve & Co., London.

pass round the base of the Table Mountain, and to get from it into the broken rock-wilderness of the Inanda —a spot that marvellously realises Von Buch's happy epithet of 'Felsen-meer,' or rock-sea. A few miles above the extreme point which is reached by the eye in this noble landscape, as it is represented in plate VI, this stream leaps over a rocky precipice sixty feet high, in a dozen white streams, which are separated from each other by masses of dark rock and rich tangles of green foliage, as shown in plate VII. A dozen miles further, and sixteen miles to the north of the city, near the main upland road, the same river makes a still bolder plunge of 323 feet, over a precipice of bare trap, and then surges down into the ravine, which leads the stream on to the lower fall. This higher cataract is within one foot of being twice the height of Niagara, and when the river is full, at the season of flood, is a very magnificent object, displaying all the characteristic features of the large waterfall on the grandest scale, as presented by the artist in plate VIII. The river, of course, is of very inferior bulk to the Niagara, but it has water enough to make a very impressive display, especially when the observer gets close to the edge of the curtain of water above, as it sweeps down to its tremendous leap. One of the tracks of the high road to the interior crosses the river by a rocky ford, immediately above the Fall, at a spot that is marked in the engraving by a white fragment of masonry, which is the remnant of an old bridge that was washed away while in process of construction some years ago. The line of the road is also indicated by an ox-waggon, which was coming down the descent to the drift, or ford, from the left, when the Fall was photographed for the purpose of the illustration.

This ford is, of course, impassable at seasons of flood, and it is more pleasant at all times to traverse before the precipices which lie so close at hand on the right and the leap of the falling water have been seen. There is another large waterfall, of scarcely inferior beauty, in a ravine but a few miles away, where the Kar-kloof River comes down to join the main stream of the Umgeni, between its upper and lower Fall.

The grand view of the Felsen-meer, or rock-sea, of the Inanda is seen in its utmost magnificence, about half-way between the Port and Pietermaritzburg, from the high road itself, where this passes along a saddle-back buttress with deep gorges on either hand. The rocky billows of the granite protuberances lie in successive ridges under the eye for mile after mile, until they are lost in the grey or purple horizon of the far distance. It is near to the spot where this rock-sea bursts suddenly into sight that some of the finest specimens of granite-boulders are seen clinging, to appearance treacherously, to the steep faces of the hills. There is, however, on the further side of the Inanda, at Esidumbini, close under the Nodesberg Mountain, and still only a long day's ride from Pietermaritzburg, one yet more cyclopean and noteworthy slab, which rests obliquely on the hillside upon three small pinnacles of rock that seem quite insufficient to sustain its enormous mass. This slab is 140 feet long, 95 feet broad, and 30 feet thick, and has taken up a sloping position, in which it is 34 feet from the ground at one end, and only 10 feet at the other, where it projects to a most formidable extent beyond its supports, and looks as if it must yet complete its descent to the ground in that direction some day.

LOWER FALLS OF THE UMGENI, p. 57.
L. Reeve & Co., London.



GREAT FALL OF THE UMGENI AT HOWICK, p. 57.

L. Reeve & Co., London.

CHAPTER III

CLIMATE.

THE Colony of Natal lies in a region of the earth that is not very far removed from the tropical latitudes in which the southern trade-wind prevails; that is, it is but just outside of the region where there is a constant and steady movement of the air from the south-east towards the north-west. The actual extent of the southern trade-wind is included between the parallels of 3° and 25° south, and the northern part of the sea-coast of Natal is, approximately, 29° south. The general range of the sea-coast is also immediately across this direction of the southern trade; it runs from south-west to north-east. The consequence is, as the land gets more rapidly heated by the sunshine in the day than the water, that a very strong tendency to the production of a sea-breeze is established during the day. But such breeze, under the circumstances which have been named, is also from the south-east; that is, it lies in the same general direction as the current of the trade-wind. The great geographical inclination in the atmosphere to flow toward the north-west, which is hardly lost in the latitudes of Natal, is thus renewed, and reinforced by a powerful secondary natural agency; and the sea-breeze, as a

matter of fact, predominates over the land-breeze in a very remarkable degree. Careful observations at Pietermaritzburg, conducted over a long period of time, showed that even at that distance inland the air moves from the sea inward over the land nearly six times more frequently than it moves outward from the land towards the sea.

This very remarkable prevalence of the sea-breeze over the land-breeze has a most important bearing upon the physical condition of the colony. It, in the main, determines the character of its climate, and fixes the laws of its rainfall and temperature. The air, as it comes drifting in from its long passage across the Southern Ocean, very naturally takes up into itself as large a load of watery vapour as it can bear. But when it reaches the land with this load, it has immediately to begin to mount up the incline of the steep land-slope that lies before it. When it has travelled in from the sea seventy miles it has of necessity reached an elevation of one mile above the surface of the ocean. But at that elevation it finds itself relieved from more than a sixth part of the weight of the superincumbent atmosphere which it had to support lower down at the sea-level. It accordingly expands and rarefies under this relief from pressure, and at the same time is chilled, partly by the act of its expansion, and partly from its ascent into the cooler regions of the higher atmosphere. In its expanded and cooled state, however, it is able to carry a smaller load of watery vapour than it did in its denser and warmer condition; and accordingly the excess of the watery load appears, in the first instance, as mists and clouds, which gather about the hill-tops, and then is precipitated upon the

ground as rain In this way the preponderant sea-breeze that comes in from the Southern Ocean is a never-failing source of abundant rain.

But, as a matter of course, more vapour is raised from the sea into the in-drifting mass of the sea-breeze in the hot season of the year than in the cold, and accordingly there is more water in the air to be shed upon the slopes of the land in that hot season than there is at the opposite period of the year. The summer of Natal is, for this reason, a season of copious rain, and the winter a season of relative dryness; and on the same account the summer is a time of abundant and frequent cloud, and the winter a time of preponderant sunshine. The summer of Natal is consequently cooler in a material degree than it would otherwise be, on account of the frequent prevalence of cloud and the abundance of the rain-fall; and the winter has its temperature materially raised, from the constant occurrence at that time of clear skies and bright sunshine.

The amount of rain which fell at Pietermaritzburg, which is 40 miles from the sea in a direct line, and 2,095 feet up the land-slope, during ten years of close and exact observation,[1] extending from 1858 to 1867, was 303 5 inches, or 25¼ feet; that is to say, if all the water had remained where it fell, without running away at all during those ten years, it would have stood as a pool upon the land 25¼ feet deep This gives an annual mean rain-fall for the capital of the colony of 30 35 inches, which is only about a sixth part in excess of the mean annual fall of London, namely 25 inches.

But the 30 inches of rain in Natal fall in a very

[1] Made with standard instruments at the observatory of the Editor, who is exclusively responsible for these notes on the climate

different way to that in which the 25 inches of rain fall in London. By far the largest quantity of it comes down in the six months of summer; and, the principal part of the fall being thus condensed into a shorter period of time, the rain makes itself very much more palpable to observation than the comparatively small excess for the average of the entire year would lead the observer to expect. Of the 30 inches, nearly 25 inches come down during the six summer months of the year, extending from October to March, and scarcely more than 2 inches during the four mid-winter months, extending from May to August. During the two months of April and September just 3 inches fall. The seasons of Natal thus naturally divide themselves into a wet period of six months, extending from October to March, in which the average monthly fall is $4\frac{1}{5}$ inches; a dry period of four months, extending from May to August, in which the average monthly fall is a trifle over half-an-inch; and an intermediate or transition period consisting of April and September, in which the average monthly fall is $1\frac{4}{10}$ inches. If the dry season is considered to be restricted to the two mid-winter months, June and July, and the intermediate or transition period is taken to comprise the four months of April, May, August, and September, then the monthly mean fall for the actually dry season is just $\frac{1}{4}$ of an inch, and the monthly mean fall for the intermediate period $1\frac{1}{5}$ inches.

The average fall of rain for each month in the year, deduced from a period of ten years' observation at Pietermaritzburg, was—

	Inches		Inches
January . .	3·27	July . . .	0 25
February . .	4·45	August . . .	1·01
March . . .	3·40	September . .	1·41
April . . .	1·58	October . .	3·29
May . . .	0·75	November . .	4·91
June . . .	0·23	December . .	4·87

The actual rainfall for every month in the year during the ten-year period which is discussed in these observations was—

Months.	1858.	1859.	1860.	1861.	1862.
January . . .	2°82	3°92	2°30	2°17	5°31
February . .	2·31	3·05	4·19	4·45	3·24
March . . .	3·95	2·89	0·83	2·43	3·74
April . . .	1·48	0·75	1·72	2·02	1·98
May . . .	0·00	0·92	0·39	0·66	1·40
June . . .	0·09	0·55	0·06	0·00	0·00
July . . .	0·15	0·74	0·04	0·04	0·03
August . . .	3·44	1·20	1·34	0·08	1·29
September . .	0·08	1·69	3·11	0·21	0·64
October . . .	3·26	4·36	3·54	3·12	2·14
November . .	4·15	4·64	8·95	2·49	4·05
December. . .	5·68	3·63	4·13	4·67	6·14

Months.	1863.	1864.	1865.	1866.	1867.
January . . .	1°80	6°63	6°41	4°97	3°40
February . . .	5·53	7·59	4·04	3·57	5·66
March . . .	2·01	5·04	4·57	4·45	3·86
April . . .	1·70	0·19	1·74	1·15	3·14
May . . .	2·04	0·89	0·39	0·00	0·00
June . . .	0·08	0·07	1·28	0·25	0·00
July . . .	0·74	0·00	0·10	0·41	0·00
August . . .	0·20	0·34	1·26	0·59	0 37
September . .	1·75	0·67	2·44	1·85	2·04
October . . .	7·21	4·20	0·93	1·10	3·08
November . .	3·75	5·46	3·18	5·79	6 69
December. . .	6·00	6·23	3·84	5·15	3·25

The largest monthly fall in this ten-year period at Pietermaritzburg was in the month of November, 1860, and amounted to 8·95 inches.

The greatest rainfall that occurred in either of the twelve months of the year was for—

	Inches		Inches
January . .	6·63	July . . .	0·74
February . .	7·59	August. . .	3·44
March . . .	5·04	September . .	3·11
April . . .	3·14	October . .	7·21
May . . .	2·94	November . .	8·95
June . . .	1·28	December . .	6·23

The actual rainfall for each year of the series concerned in these observations was—

	Inches		Inches
1858 . . .	27·42	1863 . . .	34·66
1859 . . .	28·40	1864 . . .	37·31
1860 . . .	30·60	1865 . . .	31·08
1861 . . .	22·41	1866 . . .	30·26
1862 . . .	29·91	1867 . . .	31·49

In this series of years the difference between the greatest and the least yearly falls was only 12¼ inches; the greatest and the least annual falls being approximately in the ratio of 3 to 2.

The thirteen heaviest falls within the limits of a single day during this period were—

	Inches
February 12, 1867	1·54
November 18, 1864	1·70
December 8, 1864	1·70
December 16, 1863	1·72
May 24, 1863	1·80
March 1, 1866	1·82
January 27, 1866	1·82
February 19, 1864	1·89
April 24, 1867	2·08
October 22, 1863	2·20
January 29, 1862	2·26
December 9, 1861	2·37
January 1, 1865	2·50

There were thus only five occasions during the ten years on which the daily fall exceeded two inches. The heaviest daily fall within the period was two inches and a-half. On one occasion only, a fall a little in excess of one inch within the hour was noted.

The seven most marked *clusters of rainy days* gave connected falls of between three and a-quarter and six and a-half inches. These notable falls were—

	Inches		
In November, 1859 . . .	3·48	in	4 days
„ December, 1863 . . .	4·20	„	5 „
„ February, 1864 . . .	4·40	„	9 „
„ October. 1863 . . .	4·60	„	6 „
„ December, 1864 . . .	5·10	„	11 „
„ January, 1865 . . .	5·40	„	13 „
„ November, 1860 . . .	6·50	„	9 „

From an examination of eight of the years of this rainfall period it appears that rain falls in the city of Maritzburg on about 124 days in the year, and that no rain falls on about 241 days of the year. The average number of days on which some rain occurred in each of the two mid-winter dry months was $1\frac{1}{2}$; in each of the four intermediate or transition months, $6\frac{1}{4}$; and on each of the six wet months, $15\frac{3}{4}$, or approximately on each alternate day.

The exact number of days on which rain fell, reduced to, and estimated as, an average, were—

	Days		Days
January . . .	16	July . . .	2
February . . .	14	August . . .	5
March . . .	13	September . .	8
April . . .	9	October . . .	17
May . . .	3	November . .	17
June . . .	1	December . .	18

In the ten-year period there was one exceptional occasion when rain did not fall for an interval of 107 days. On four other occasions there were *rainless* periods of 68, 58, 56 and 51 days. Twice there were 42 rainless days together. Six times there were between thirty and forty rainless days together; and eight times between twenty and thirty rainless days together. Such were, however, the only occasions on which twenty days passed without some rainfall.

The general process of the rainfall in the wet season is, however, not that rain falls on alternate days, but that a series of three, four, or five wet days occur, and that these alternate with a series of as many dry days. The relations of these alternate periods of rainfall and dry weather to the fluctuations of the barometer will have to be alluded to presently.

These records have been given for the city of Pietermaritzburg, which is situated some distance inland, and 2,095 feet above the level of the sea, because the editor's own observations were made at his residence there during the years which are specified.

The observations which have been brought together and discussed in these returns may be accepted as giving a very exact and sufficient expression of the great leading characteristics of the climate of the midland districts of the colony, removed some miles into the interior and lying midway between the low sea-coast and the highland mountain range.

But the climate of the low range of the sea-coast differs materially from this in several important particulars. In the first place, it is an unquestionable fact that the rainfall on the coast is, on the whole, *heavier* than the rainfall on the hills at the height of

Pietermaritzburg, instead of being heavier on the hills than on the contiguous lowlands, as is so commonly the case in England. Thus, in 1866, when the rainfall at Pietermaritzburg for the entire year was 30·26 inches, it was 48·54 inches at the Port of Durban near the level of the sea. There are two obvious reasons in Natal for this peculiarity—in the first place, more rains, as a rule, fall on the coast than on the uplands during the dry season of the year. But, in addition to this, every now and then exceptionally heavy sea-storms occur, which deluge the coast with a down-pour that exhausts itself in its first burst on the land, and that then grows rapidly less and less as it drifts inwards up the land-slope. Both these influences become immediately apparent if the rainfall for each month at the capital and on the coast for this year be compared.

Thus, the rainfall in 1866 was, in inches, in—

	At Pietermaritzburg	At Durban
January	4·96	1·01
February	3·57	2·67
March	4·45	20·19
April	1·15	1·20
May	0·00	2·41
June	0·25	0·00
July	0·41	1·21
August	0·59	2·13
September	1·85	3·98
October	1·10	4·37
November	5·79	5·76
December	5·15	3·61

Now, here it will be observed that the rainfall at Pietermaritzburg was in excess of that at Durban in all the months of the wet season, excepting February and October; and that it was in excess at Durban in

all the months of the dry season excepting June; and, again, that in the month of March there was something beyond 15½ inches more rain at Durban than in Pietermaritzburg. The excess at Durban during five months of the dry season was nearly 8 inches. That was due to the inflowing sea air at this period having exhausted itself of its superfluous moisture on its first contacts with the land, and before it had penetrated as high and as far as Pietermaritzburg; and the excess in the month of March was due to the occurrence at that time of a single heavy sea gale, which deluged the coast.

Again, in the year 1867 the rainfall for each month at the city and at the port was, in inches:

	Pietermaritzburg	Durban
January	3·40	1·11
February	5·66	5·41
March	3·86	3·66
April	3·14	6·89
May	0·00	0·07
June	0·00	1·26
July	0·00	0·16
August	0·37	0·43
September	2·04	2·21
October	3·08	4·24
November	6·69	5·49
December	3·25	1·52
Total for the year	31·49	33·08

Now here it will be observed that there was excess at Pietermaritzburg over Durban in all but one of the months of the wet season, and excess at Durban over Pietermaritzburg in every month of the six months of the dry season. Yet, on the whole, the excess of the coast rainfall over the rainfall in the capital in this year did not amount to quite 2 inches. This was

because in the year 1867 there was no heavy sea gale rain upon the coast.

In actual fact, rainfall is caused in Natal by two essentially distinct influences. First, by the development of storms, more or less of the character of thunderstorms, which most powerfully affect the inland districts and the uplands; and, secondly, by the occurrence of sea gales, which fall with most force upon the coast, and the lands in the close neighbourhood of the sea. The upland storms, which are of comparatively brief duration, but of frequent recurrence, and which are accompanied by manifestations of strong electrical disturbance, are the agency to which the general stretch of the country owes its luxuriant verdure and its productiveness. There are about ninety-five days, on the average, on which rain falls at Pietermaritzburg in the six months of the wet season, and there are about 51 days, on the average, of thunderstorm in the town; and, in addition to this, it must be understood, there are continually rain-days, in this thunderstorm season, in which storms are in progress just beyond the reach of eye and ear, and therefore not perceptible in the town, or in which the condensation of moisture and the deposit of rain is of the same general character, although not altogether rapid or copious enough to give rise to electrical manifestation. On the other hand there is not more than a single thunderstorm, upon the average, at Maritzburg during the two midwinter months of the dry season, and not more than twelve thunderstorms over or near Maritzburg during the six months of the dry season. The dryness of the winter season in Natal is due to the fact that there is less abundant invisible moisture contained in the air

which comes in from the sea; and that the up-cast of the air due to the strong heating of the land during the day by sunshine, to which the physical changes that immediately lead to the precipitation of invisible moisture into the visible and tangible form are referrible, is less energetic and less perfectly developed at that time. The same general action goes on, but in much lower intensity and energy. The clouds may be still seen making strenuous efforts in the early afternoon to pile themselves in great cumulated masses round the higher hills, but they do not as certainly extend themselves down to the midland, and lower regions, and only succeed in the production of actual manifestations of accumulated electrical energy on comparatively rare occasions. There is still an attempt to get up a thunderstorm, but the attempt is, for the most part, abortive.

During a period of eight years there were 415 days on which thunderstorms were fully developed at Pietermaritzburg, and yet 213 other days on which lightning was seen or thunder heard in the town although no actual storm broke over it. It will be understood that on the thunderstorm days a succession of thunderstorms, with intervals of more or less quiet rain between, pass over the town; and that on the days when lightning is seen or thunder heard there are storms of an altogether similar kind developed in the close neighbourhood, although not extending their influence to the town.

The frequency of the occurrence of thunderstorms at Pietermaritzburg, in the several months of the year is expressed in the following abstract, in which the storms of all the years are combined into a monthly

average. The mean number of storms for each month in this series of years was:

January	$7\frac{1}{8}$	July	$\frac{7}{8}$
February	$8\frac{3}{8}$	August	$1\frac{1}{8}$
March	$5\frac{3}{8}$	September	$3\frac{5}{8}$
April	$3\frac{7}{8}$	October	$6\frac{3}{8}$
May	$1\frac{1}{2}$	November	$7\frac{1}{2}$
June	$\frac{1}{4}$	December	$7\frac{7}{8}$

From this average it will appear that the chances are that no thunderstorm will be experienced at Pietermaritzburg during the months of June and July; but that in each of the months of the wet season, extending from October to March, something more than seven thunderstorm days may be looked for, or in other words, that a thunderstorm may be expected on the average every fourth day. As an actual fact, however, storms generally occur on several successive days together, and then leave several days free. In the month of October it sometimes happens that storms occur for six and even seven days in succession. In reference to this matter of the distribution of the thunderstorms it may be worth while to draw passing notice to the remarkable indication of progressive law which is expressed in even this short period. It will be observed how nearly the corresponding months at opposite sides of the approximately stormless period agree in the numbers which express their relative expectancy of storms—thus:

May—August	$1\frac{1}{2}$		$1\frac{1}{8}$
April—September	$3\frac{7}{8}$		$3\frac{5}{8}$
March—October	$5\frac{3}{8}$		$6\frac{3}{8}$
February—November	$8\frac{3}{8}$		$7\frac{1}{2}$
January—December	$7\frac{1}{8}$		$7\frac{7}{8}$

The greatest number of thunderstorms that occurred at Maritzburg in each several month, for this period of eight years, was, in—

January . . .	12	July . . .	2
February . . .	10	August . . .	3
March . . .	9	September . .	10
April . . .	7	October . . .	14
May . . .	6	November . .	12
June . . .	1	December . .	11

The mornings of the days on which thunderstorms occur are generally bright and clear, with hot sunshine, but with a steady and strong sea-breeze blowing in from the south-east. At noon, or soon afterwards, massive cumulus clouds begin to gather about the tops of the hills and mountains to the northward of the town, and to extend themselves gradually but continuously. Sooner or later in the afternoon heavy mist rolls down from the hills, the sun is concealed, and slight rain begins to fall. Distant thunder is next heard, and this then resounds at short intervals nearer and nearer, until at last the actual tempest sweeps by with an accompaniment of gusty wind, and with sheets of driving rain, the vivid lightning flashing down from the thick clouds, now here, now there, in broad vibrating streams, and the thunder first bursting, as it does so, with a crash, which, after a perceptible pause, passes on into a reverberating and subsiding roll. The actual fury of the storm is, however, generally of short duration. A stream of bright-coloured forked lightning, five seconds before a a rolling thunder-peal to the west; a blinding flash and a deafening crash, almost of simultaneous occurrence, and seemingly in the next garden or field; another lightning streak, ten seconds before a loud

thunder-peal, quivering down in the inky cloud-sheets towards the east, and the storm is gone, and can be traced on the further track of its retreat, even after the sound of the thunder is lost, by the coruscations of lightning that 'star' and 'diadem' the sky in that direction at intervals. It is one of the agreeable traits of the thunderstorm in this region that it is almost always of very lively movement, and rarely lingers or hovers over the place, as thunderstorms are so apt to do in England. It only once happened to the writer, during a lengthened period of observation of Natal thunderstorms, to be able to mark six tolerably close discharges of lightning within ten minutes. The rain, however, does not cease when the brunt of the storm is over; it continues to fall, although with less urgency and vigour, for two or three hours. It then stops, but the air does not clear; the sky remains shrouded with hanging mist until far into the night, and this is not dissipated, in preparation for the next morning's sunshine, until an hour or two after midnight. It is then torn asunder, and the clear sky appears filled with a sparkling glory of scintillating stars, more clearly and brilliantly defined than at any other time. When the air is first cleared from its night-mists, after the thunderstorms, it appears to have been washed thoroughly from all its light-obstructing impurities.

The manifestations of electric force in thunderstorms are obviously connected very intimately with the heavy fall of rain which is so commonly an accompaniment of the disturbance. Very sudden and very copious deposits of moisture in the air seem, indeed, to be indispensable to the production of lightning and thunder upon the scale in which these are met with

in the thunderstorm. But the sudden and copious deposits of moisture are not the only conditions that are essential to the result. In the heavy sea gales, which occasionally deluge the coast districts in Natal, there is oftener a much more rapid and copious production of rain than there is in the heaviest thunderstorms, without the occurrence of lightning and thunder. In all probability the primary source of the electrical disturbance is the invisible evaporation of the water from the sea. The distinguished electrician Mons. Becquerel has been able to demonstrate that the surface water of the sea, and the stratum of air which rests immediately above it, are always in a state of positive electrical excitement, while the surface of the land is as constantly in a state of negative electrical excitement. The vapours which ascend from the sea, and which are carried into the land upon the wings of the sea-breeze, are, accordingly, charged with this positive electrical force. In the ordinary circumstances of fine weather the electrical force thus brought in from the sea is slowly and silently dissipated. But in the extraordinary circumstances which attend the development of a thunderstorm, layers of cloud and air are so arranged that the force is accumulated in more or less insulated vapour-sheets, and intensified by the operation of induction until it has energy enough to be able to leap in the lightning's flash from the clouds to the earth. The particular instrumentalities, which are brought into play to effect this arrangement of cloud-strata and air-strata in the atmosphere, where the thunderstorm is a part of almost the ordinary daily arrangements of nature, as in the case of Natal, are, as yet, but imperfectly understood. But they unquestionably are

essentially dependent upon the great fundamental electrical law of induction, which gives static tension to local and isolated accumulations of electrical force in the air, and so turns the cloud masses of its higher regions into Leyden batteries of a power commensurate with their enormous extent. These cloud batteries, nevertheless, are primarily charged with their terrific artillery by the simple and gentle expedient of the continuous drifting in to their receptive vapour-masses, as they form, of the comparatively exhaustless supplies of sea-moisture, charged with the fresh positive electrical force inherent in the surface of the ocean. All the well-known phenomena of atmospheric induction in the neighbourhood of thunder-clouds, and at the time of thunderstorms, are presented and clearly marked in Natal. Prominent objects connected with the ground lying beneath an approaching thunder-cloud become powerfully charged with negative electricity through the inductive influence, thus showing that the predominant charge in the cloud is of a positive character. The air-space surrounding the positively charged cloud, in the same way, is in a state of negative excitement. An electrometer raised into the air gives signs of the presence of negative electrical activity as a storm-cloud approaches, of positive electrical activity when the instrument is engaged with the conductive vapour-masses of the cloud, and then, again, of negative activity as the cloud passes away. It also sometimes happens that negatively electrical vapours are suddenly generated in, and poured out from, the moist, heated ground, and that negatively charged thunder-clouds are developed from the accumulation of these vapours. The heavy hailstorms which are at times experienced

over limited ranges of country in Natal appear to be associated with the production of such negatively charged thunder-clouds. A very large proportion of the thunderstorms at Pietermaritzburg occur in the afternoon, or in the earlier hours of the evening. The summer-season rain almost always falls, or begins to fall, at the same part of the day. During a period of eight years two-thirds of the summer rains began to fall between the hours of three and seven after noon. It is by this instrumentality, therefore, that the luxuriant fertility of the land is mainly secured. There is a steady 'bottom heat' so to speak, maintained by the almost tropical sunshine of the morning hours; and the rose of the thunderstorm watering-pot is swept evenly over the land with almost periodical regularity, now on this side and now on that. The entire country is thus literally clothed with verdure, from the sands of the sea to the tops of the mountains, during a very considerable portion of the year. The thunderstorms not infrequently sweep along over a comparatively limited range of country, leaving intermediate intervals unvisited by their presence, so that it by no means follows, when any particular locality is without a storm during the appropriate hours of the afternoon, that there are not places within fifty miles to the right or the left where the storm is putting in a vigorous appearance. In this way, as in a garden by the gardener's hand, the watering-pot is swept over different portions of the land in intermittent succession. As a general rule the Natal thunderstorms appear to occur at earlier hours of the day at the higher and more remotely inland stations of the colony, and at later hours of the day near the coast.

The electrical discharges of the Natal thunderstorms are obviously of very high degrees of intensity, but whether of actually higher degrees of intensity than the lightning discharges of the heaviest English storms it is not yet possible to say. There is, however, one notable appearance of the lightning of Natal that goes very far in suggesting the probability that such may be the case. It presents itself commonly to the eye as a *broad, quivering ribbon*, rather than as a sharp mathematical line; and the quivering is so marked that very often the lightning seems to be lingering for a measurable instant in the sky. There can scarcely be a doubt that this peculiarity must be due to a series of discharges following each other very rapidly along the same track. The intensely-charged cloud seems to be relieved by successive leaps. It is also quite possible that the 'ribbon-like' breadth of the lightning may be due to the very wide spaces of air that are involved in the transmission of the escaping electric force. Many animals are commonly struck simultaneously by the lightning discharge in Natal, and when this occurs the place generally shows a brown surface of seared grass many yards in diameter, proving that the simultaneous destruction of the animals is due to the extension of the force, as the earth contact is made, over a broad area in which the animals are so many separate points, and not to the progressive passage of the discharge through animal after animal as successive links in a chain. In 1863 eleven head of cattle, belonging to a Kaffir, were killed in this way in the open country near the Noodsberg Mountain. In 1862 seventeen calves were destroyed on the pasture near the Mooi River. In 1863 twenty goats, belonging to a Dutch farmer named Richter, were struck; and of

these sixteen of the number were killed. This, most probably, concerned animals feeding upon the pasture in more open order, as goats and sheep are in the habit of doing. Horned cattle who are old stagers not uncommonly cluster themselves together in severe storms, turning their heads inwards and hanging them down, and ranging their backs out like the several spokes of a wheel. These are very good tactics of defence against the wind and rain, but the proceeding indicates a very lamentable ignorance of the laws of electrical science. The chances of escape of animals ranged in this way while exposed to a severe storm are very much less than they would be if the animals were widely scattered over the pasture in open ranks.

The lightning in Natal is frequently of a much more intense and brilliant colour than any that is seen in England. The quivering, ribbon-like track of the actual discharge is often of a bright rose colour, and at times the roseate hue passes into delicate pink, pale blue, or lilac, or is deepened into full orange or purple. Occasionally the discharge is pure white, and sometimes it assumes a very remarkable, dull, leaden tint. The beauty of the display of coloured fire is often enhanced and diversified, as the storm drifts away, by the tracing of figures of quivering lines in the dark masses of the retreating clouds at each discharge. At one time a large coronal of fire leaps from the rolling mist and darts outwardly radiating lines in all directions. At other times the radiant figure imitates the arrangement of the lines produced in starred glass. It looks as if a brittle cloud was suddenly cracked and 'starred' with little fissures of fire. Very frequently the lines of the coloured light pass horizontally to and fro, shooting

backwards and forwards, like a weaver's shuttle, immediately above the flat tops of remote Table Mountains that are themselves invisible in the darkness. Occasionally the vertical walls of the tabular slabs of the mountains are battlemented with fire; and at other times the lightning-track leaps along through the cloud in indefinite loops and 'bent bows,' with fringes and offshoots transmitted in every conceivable direction. These very beautiful appearances are of course, due to the passing of subordinate electrical discharges, of comparatively low intensity, from cloudlet to cloudlet, as the redistribution and readjustment of the charge of the conducting mass takes place when the general tension is altered by lightning flashing from some outlying constituent of the cloud—exactly as happens when the electrician discharges a Leyden jar in which the external coating has been broken up into diamond-shaped spangles. As the storm gets too far away for the tracks of these 'internal' lightnings to be discerned there is another form in which the light is revealed which is scarcely less splendid in its way. The edges of the darker masses of the cloud are brought out into the most intense relief by a sudden glow that bursts from deep vistas of space beyond, and that seems, for the passing instant, to be a glimpse of remote infinity. At times these 'aurora-like' glows may be seen flashing forth from the edges of a cloud-canopy that covers the higher heavens in all parts of the horizon in rapid succession, as if 'repeating signals,' to each other with some specific and understood design. Displays of this character are apt to be prolonged into the approaching night for considerable intervals of time, possibly extending even to hours. These lightning-signals

may at times be seen thrown out in rapid succession from six different points of the horizon, and occurring as frequently as fifty-six flashes per minute. This very interesting display is, no doubt, produced by the reflection from broken cloud-masses of the light emitted by the 'coronal' and 'radiant' and 'starred-glass' discharges that have been already spoken of.

The heating and disruptive effects of the lightning-discharge are sometimes manifested in Natal in a very notable form. The tendency of the escaping force to make free with the metallic bodies that are so essential to the maintenance of its fires at the instant of the discharge, is continually illustrated. In one instance, where a small house was injured by a stroke of lightning, the gilding of some picture-frames hanging upon the walls was stripped from the frames and spattered over the surrounding plaster without any perceptible damage being produced in the pictures themselves. Some years ago a small house of public entertainment, at that time known as the German House, and standing upon the high road between Durban and Pine Town, was struck by lightning and burned down. Upon a spot where a box had stood that contained money, a half-sovereign was found when the ruins were cleared away, or rather a portion of a half-sovereign inseparably welded to a fragment of tinned sheet-iron, which originally formed part of a so-called tin box in which the gold coin had been deposited. This very interesting specimen, which was kindly given to the writer by Mr. Shepstone, the Secretary for Native Affairs in Natal, now lies before him as he describes its appearance and aspect. The entire mass weighs 75 grains of metal, of which about 30 grains are gold and the rest iron. Something more

than the half of the gold coin has been removed, and the remainder has assumed the form of a jagged fragment, with one crescent horn projecting out beyond the iron. The edge of the gold, where the rest has been eaten away, presents little tubercles of past fusion. The 'Dei gratia,' and the hair of the Queen's medallion are entirely uninjured, and, on the other side of the coin where it projects beyond the iron, also the letters of 'gina fid:' But the rest of the gold piece, extending over a space of about one-third of a square inch, is *metallically connected* with the iron by a firm, substantial joint, formed by the molecular intermingling, or brazing together, of the particles of iron and gold; and the tinned surface of the fragment of iron is 'bronzed' by a thin film of gold particles that have been scattered over it at the instant of 'brazing.' The fragment of iron plate is one-inch long, by three-fifths of an inch broad. The gnawed-out aspect of the gold coin where the remnant has been left by the electric tooth is very curious. A thin band of lighter-coloured gold, that looks as if it had been alloyed either with tin or iron so far, is set round the sinuous edge of the erosion; and one central spot, which is left as a sort of pivot-head to the attachment of the iron and gold, is covered entirely by the same pale 'amalgam-like' hue. The horn of the gold crescent that is protruded beyond the iron is coarsely-toothed and bent out of the flat plane of the coin, and at that place the impression of the die seems to have been entirely effaced. The grass in the open country is very frequently set fire to by the lightning, even when it is wet with rain. When houses in exposed situations, and that are not furnished with lightning-rods, are destroyed by lightning—which sometimes takes place—it is almost always in con-

sequence of the thatched roof having been inflamed in the first instance. The Kaffir huts, which are generally built on exposed hill-sides, and which are made of dry grass or reeds, are very apt to be burned by lightning; and, when they are, it sometimes happens that a small lump of glass-like slag, which has been formed by the melting together of the flint and other mineral and incombustible ingredients of the straw, is the only remnant that is left on the blackened ground to show where the hut has been.

By far the greater number of rainy days in Natal are due to these thunderstorm-rains, which commence in the afternoon. In a series of observations made to determine this fact, and which extended over a period of six years, rain began to fall at Pietermaritzburg on 577 days *after* noon, and on 123 days before noon. During those 123 days there were 42 occasions on which marked sea-gales were bringing in the rain, and these gales almost invariably continued from two to three days. The series of 123 morning rains was, therefore, in this way fairly accounted for. Thunderstorm-rains are to sea-rains in the midland districts about as 5 to 1. The sea-rains are generally very heavy on the immediate sea-coast, and then become less and less heavy inland, until very often on the highest mountains they are little more than Scotch mists. The thunderstorm-rains, on the other hand, burst upon these mountains in concentrated abundance. The general result of the distribution of the rain in Natal in the way that has thus been described is that there is always water in the rivers. Excepting in some rare instances of very small streams they never run dry even in the midst of the dry season. But, as a general rule, the rivers are

very much more full in the summer season of frequent thunderstorms than in the drier period of winter, and in that season are apt to be raised within a few hours into the state of actual flood, impeding all passage of unbridged streams.

This occurrence of flood is, for the most part, naturally provided for by the rivers running in deep channels with high banks and with steep gradients, so that the surrounding country is not much affected by the flood. In one instance, in the year 1859, the writer encountered a very impressive illustration of this peculiarity. He rode across one of the large upland rivers one day in the month of November with the water scarcely up to the middle of his horses' legs in the drift. But returning to the same spot on the following day, at the end of a violent thunderstorm, he found an impassable torrent, more than 20 feet deep, surging along in the channel before him, turbid with dense sediment and covered with broken waves, which were tossing along in their rapid impetuosity huge fragments of trees, torn from the banks of the stream. The adventure on this occasion was only ended, after a ten hours' scramble over wild hills in a maze of swollen and impassable watercourses, and after a twenty-six hours' fast, by swimming the horses over the swollen river at a higher and safer part of the stream, where there was a ferry-boat available for the bipeds as soon as the impetuosity of the current had sufficiently subsided to render the passage in this way practicable. The rain-fall on this memorable occasion was the one which appears first in the cluster of rainy days alluded to in a preceding page, and which is marked as 3·48 inches falling at

Maritzburg within four days, the date of the fall being November 1859. This storm reached Pietermaritzburg, sixty miles to the south of the flooded river of the adventure, at two in the afternoon; and the rain-fall in the city for that particular storm was registered 1·64 inches. The fall was, no doubt, considerably heavier in the Bushman's River, where the great flood was observed, than it was in the lower region of Pietermaritzburg; thus illustrating what has already been stated, that thunder-storm-rains are more abundant on the hills than in the lowlands.

Floods of a very much more serious and disastrous character are, however, at long intervals brought about *in the coast districts* by sea-gales of exceptional violence, and especially where the valleys are of a more open character and associated with flats which are obnoxious to overflow. The first flood of this character within the historical period of the colony occurred in the year 1856, between the 14th and 16th of April, during a three days' violent sea-gale.

The River Umgeni, within four miles of the seaport rose 28 feet above its usual level, within two feet of its mouth, on that occasion, and burst over the sand-flat on which Durban is built, making its way to the inner bay, and for some time threatening the town itself with destruction. The river Tongaati, further up the coast, rose 16 feet above its usual level, and spread a bed of sand 4 feet deep over the neighbouring pastures. The sea-beach was covered with trunks of large trees, and vast deposits of reed, carried down by the swollen streams, and then cast back from the sea by the breakers. The bodies of two hundred dead oxen, which had been brought down with this *débris*, were counted along the

sea-sands, within ten miles of the mouth of the Umgeni. The bridge over the Umsindusi, at the entrance of Pietermaritzburg, was swept away and all communication between the seaport and the city interrupted for some days. The rain-fall at the seaport during these three disastrous days amounted to 27 inches. It was under 11 inches at Pietermaritzburg, and the Bushman's River, sixty miles higher up, was scarcely raised above its usual level.

The next occasion when a destructive flood occurred in the coast districts was on August 28, 1868. The rain-fall on this occasion continued until the morning of the 31st, and for a period of sixty-four hours. The gale came in from the south-west. During the first two days the water in the river Umgeni, near Durban, rose gradually. The flood was then seen by a colonist, who was engaged with some native labourers on the banks of the river, coming down like a great wall. The party was totally unable to clear the rush of the stream, and only escaped with their lives by climbing a tree, which chanced to be within reach, from which perilous refuge they were rescued, after nine hours' exposure, by a boat, and at considerable risk to two men who came bravely to their assistance. At this time a very fine bridge, which had been recently erected at a cost of 19,000*l.*, spanned the river where the road from the seaport passes the stream towards the northern stretch of coast-land. The bridge consisted of iron girders resting upon cylindrical iron piers, which were screwed to piles driven 12 feet into the bed of the river. The girders were fixed at an elevation which had been estimated to be higher than the highest rise of the

flood of 1856. At four o'clock on the afternoon of the 30th the water, however, had risen within two feet of the bottom of the girders. At seven o'clock it was within one foot of them. At midnight it was one foot *above them*, and at four o'clock on the morning of the 31st, when the day broke, the current was running between 10 and 12 knots an hour *where the bridge had been*, but only two girders and three pillars of the structure remained visible in the flood. All else had been swept away by the torrent. The Pietermaritzburg river, the Umsindusi, rose between 20 and 25 feet above its usual level, and one of the bridges of Pietermaritzburg, a comparatively rude timber structure, was swept bodily down the stream and stranded on the bank. The river at that time stood only six inches lower than its greatest height during the flood of 1856. Five other bridges in different parts of the lower districts of the colony were also destroyed, but none of the bridges in the uplands were injured. The rain-fall at Durban on this occasion was 16·54 inches, and at Pietermaritzburg 12·75 inches. Dr. Sutherland ascertained during this flood that at its height every cubic foot of the water of the Pietermaritzburg river contained an ounce of solid sediment.

The coast districts but just escaped a flood of similarly destructive intensity in 1872. The rain came in with a sea-gale from the south on the 9th of April. The fall near the seaport of Durban amounted to 12·12 inches during four days. The exact record of this rain-fall was:

	Inches
April 9th	1·00
„ 10th, Day	1·06
„ „ Night	0·95
„ 11th, Day	0·88
„ „ Night	2·70
„ 12th, Day	3·42
„ „ Night	0·70
„ 13th „	1·41
Total	12·12

The rain-fall at Pietermaritzburg on this occasion was 5·50 inches. The stream at the lower part of the Umgeni was greatly swollen, and rushed down to the sea as a furious torrent. A wooden bridge, which had been erected for temporary service in the place from which the iron bridge had been swept away in the flood of 1868, on the 12th was entirely covered by the water. But on the following day, when the water began to subside, it appeared that the temporary structure had successfully withstood the current, only one of the piles in the middle having given way to a small extent. A bridge *was* washed away upon this occasion by the small river Umhlatuzan, which flows into the inner basin of the harbour.

The relative rain-fall on the coast near Durban for the four wet months, from January to April, in each of the three years 1870 to 1872, was:

1870	18·29
1871	16·10
1872	20·28

These were all exceptionally wet seasons.

In the year 1865 there was also a 'half-flood' on the coast districts in the month of June, which is essen-

tially and properly one of the months of the ordinary dry season, but it was not attended with any severe inconvenience. It, however, served to illustrate very pointedly the remark that has been made of the comparative restriction of the 'flood-falls' to the coast range, as the writer chanced to be travelling along the coast at the time. He had passed the large river Umkomanzi, to the south of the sea port, in the ferry-boat, when the rain began, but was summarily stopped at the next coast-stream, the Amahlongwa, by the violence and depth of the current, and, as a matter of course, was unable to retrace his steps, because his retreat was intercepted by other similar boatless streams in the rear. He accordingly took refuge at a mission-station fortunately near, with some other travellers, and the daily amusement of the party consisted in frequent experimental trips to the banks of the river to test the depth of the water. After six days' detention the river was at last passed, with the water fully above the horses' saddle-bows, and a second stream was also successfully forded; but the next river, and the third in succession, the Umzinto, was still impassable; and the writer accordingly turned the flank of the difficulty by ascending the intervening ridge, which formed the watershed of these swollen coast-streams, and so made his way back to Pietermaritzburg. At a distance of forty miles from the sea he forded the large river Umkomanzi, with the water only half-way up the saddle; and on reaching Maritzburg he found that his instruments there had only recorded a rain-fall of 1·23 inches during the period of the flood-fall upon the coast. The rivers in the still higher region from 60 to 100 miles from the coast had scarcely risen above the ordinary winter level upon this occasion.

The loss to the colony from the flood in 1868, when the lower districts of the coast were much more fully occupied by settlers than they were at the time of the still larger, but less costly flood in 1856, was estimated at 100,000*l.*, of which 40,000*l.* represented the damage to roads and bridges.

The sea-gale rain-falls in Natal are almost invariably associated with a high barometric column, whilst the thunderstorm-rains are as commonly connected with a low barometer. The reason for this is, however, perfectly obvious. The sea-gales occur with a very strong and very strenuously-maintained southerly wind, which, like the northern wind of the opposite hemisphere, means a cold, condensed, and therefore relatively heavy, state of the atmosphere. The thunderstorms, on the other hand, immediately follow the periods of largest rarefaction from heat, which are connected with a relatively light state of the atmosphere. If the movements of the column of the barometer from day to day are traced down upon paper as a series of successive 'waves' it is almost invariably found that sea-gales correspond to the crest of these waves, and thunderstorm-rains to the hollows of depression which lie between the crests; or, perhaps, more exactly to the points where the wave just begins again to rise after the lowest dip of the trough. It must, however, be here understood that in thus using the convenient and expressive term 'wave,' when speaking of the state and movements of the air, it is not by any means intended to affirm that anything like waves in the sense of superficial waves of the sea are really involved in these alternating pressures in the air which are expressed by the rise and fall of the column of the barometer. The wave is in reality

little more than a vibratory transmission from place to place of compressions and expansions of the air-substance, in some sense of a similar character to the vibratory compressions and expansions of the substance of elastic bodies which are produced in the propagation of sound. If this qualification, however, is borne in mind, the term 'wave' becomes a very convenient means of presenting to the mind what occurs during changes of barometric pressure in the air.

In the first place, there is an almost constant *diurnal* oscillation of the mercurial column of the barometer in Natal, amounting to nearly one-tenth of an inch at Pietermaritzburg, at its height of 2,095 feet above the sea-level. The average amount, in exact numbers, is 0·078 of an inch. During a period of eight years there were only 217 days on which this diurnal oscillation was not strongly marked—that is to say, it is seen distinctly on thirteen days out of fourteen, and the exceptional days are simply those in which the barometer is rising so rapidly, under a larger and more general influence, that the diurnal oscillation is more than compensated by it and so masked. This oscillation, being a diurnal phenomenon, is unquestionably an immediate result of the periodic presence and absence of the sun caused by the earth's rotation upon its axis, although it would, perhaps, be too bold an assumption to represent it as the mere daily expansion of the air under the direct heating effect of the sun's rays, because there is a shadowy trace of a nocturnal wave-crest in the hours of the early morning as well as the more pronounced and developed wave-crest of the early hours of the afternoon. If the movements from day to day of the barometric column are expressed in the form of

waves traced out upon paper, as has been already suggested, these diurnal oscillations appear upon the contour of the larger waves like billows upon the larger swell of the sea. Indications of the occurrence of these diurnal oscillations of the barometer may be detected in greater or less degree everywhere; but as a general rule they are largely developed, and but little masked, in the inter-tropical regions of the earth, where the day and night recur with great regularity, and where the mid-day power of the sun's rays is always very large; and they are largely masked and less boldly developed in the parallels of higher latitude, where the days and nights vary so very much more in length, and where the mid-day sun has comparatively so much less power. They are for this reason marked and exceedingly interesting features in the meteorological indications of Natal.

But, even apart from these diurnal fluctuations, it may be further affirmed that the mercurial column is never stationary in Natal. It is continually sweeping boldly up or boldly down from day to day. When the most strikingly marked elevations and depressions were taken into account for a period of eight years it appeared that there were 291 of these great 'waves' of the atmosphere during the period, giving an average length of ten days for each wave. But there were also inferior undulations of a lower order, but scarcely less definitely marked—a kind of system of half-waves, tending to break up and modify the larger ones. When these were also taken into account it gave 648 waves, of an average length of four days and a-half in the eight years. These larger oscillations of the atmosphere are certainly due to a more extended and more general influence than the mere diurnal variations of sunshine

and temperature. They are brought about by the bodily and progressive transference of masses of air from place to place, and on that account they become matters of immediate moment, and of the highest significance in all considerations and discussions of climate and weather. The 'large oscillations' are unquestionably palpable tokens and signs of the great natural air-currents and wind-distribution of the district, viewed as a geographical region of the terrestrial sphere. It has been already pointed out that there is in Natal a general tendency of the lower portion of the atmosphere towards the north-west, as a part of the 'trade-wind idiosyncrasy' of the region, supplemented and reinforced by the circumstance that the great masses of heated land lie towards the north-west, and that the great space of cool ocean stretches towards the south-east. But there is of necessity also a *prevalent* compensatory set in the upper regions of the air in the opposite direction towards the south-east. The upper and the lower strata of the air flow in antagonistic currents, but of these two currents the lower comes from a cold zone of the earth and is comparatively heavy and dense, while the upper comes from a warm zone of the earth and is comparatively light and rare. When these two currents are at a normal or average relation to each other the barometer shows a certain average or mean indication of pressure. But if this medium condition is disturbed—if one current encroaches unduly upon the other, the indication of the barometer is changed in a corresponding degree. When the upper north-west current encroaches on the lower the column of mercury in the barometer goes down. When the lower south-east current encroaches upon the

upper the column of mercury rises. The lighter air, acting upon the cistern of the barometer, allows the mercurial column to fall. The heavier air, pressing more forcibly upon the cistern-surface, drives the mercurial column further up. The successive large waves of the atmosphere in Natal, therefore, indicate that there is a constantly alternating play, or action and reaction, going on in this part of the earth between the upper and the lower currents, and that first one and then the other encroaches upon the condition of mean equilibrium, and predominates over it for the passing time. Science has not yet been able to explain altogether the machinery or instrumentality by which this mighty aërial pulsation, so regular towards the tropics although more broken and disturbed in higher latitudes and colder regions, is effected, but there can be no doubt that it is the efficient means employed for giving movement and life to the restless batallion of the winds, and through them for maintaining the even distribution and essential uniformity and purity of the atmosphere. These barometric oscillations are, so to speak, the respiratory movements of nature.

Whenever the predominance of the north-west upper current prevails in Natal to the extreme degree, so that it actually reaches the surface of the ground and for the time displaces the lower south-easterly current, it is felt as a dry hot wind which parches everything it touches. This hot land-wind, when it occurs, is strong. Most commonly it is very strong, amounting almost to a hurricane. It is always irregular and fitful, expending itself in short bursts and gusts, and sweeping dense clouds of dust over the country as it continues.

It generally begins to blow in the very early morning about daybreak or before, and continues in force until the middle of the day or the early afternoon. It then lulls suddenly, and immediately afterwards a strong, cool sea-wind from the south sets in, carrying the thermometer down at once. Occasionally the hot wind returns in the same way for two or three days in succession, but it then still intermits during the afternoon and early hours of the night. It is invariably attended by great depression of the barometer; in other words, it occurs in the greatest depressions of the barometric oscillations. Thunderstorms, which also especially affect the troughs of the barometric oscillations, very commonly follow upon its heels. The great depression of the barometer is, indeed, a more certain and reliable evidence of this sea-ward set of the general mass of the atmosphere than the direction of the wind-vane, because this last is liable to be modified and affected by mere local eddies and currents. On the coast, for instance, it not uncommonly occurs that the wind is blowing along shore from the north-east, at the same instant that a north-west hot wind is prevailing at Pietermaritzburg. It is then, however, invariably found that there is a trough of the great barometric oscillation present on the coast as well as at Pietermaritzburg, and this indicates what is the true meteorological condition of the atmosphere. This peculiarity appears to be due to the hot current, which comes rushing down from the mountains, being caught and stopped when it reaches within a few miles of the actual sea-line by the inflowing set from the sea, and so being compelled to glide over the lower and cooler stratum, deflecting its movement in some degree so as

to bend it into a direction approximately parallel to the sea-shore. The rarer and lighter condition of the entire mass of the superincumbent air is nevertheless indicated by the fall of the barometer.

The thermometer very rarely rises above 85° in the shade in Natal even in the midst of the summer season, unless a hot wind is blowing. It then mounts to somewhere between 85° and 97°, according to the strength of the sirocco. In midwinter a north-west hurricane occasionally prevails without raising the thermometer above 85°, but this is rare. The reason why this hot wind generally begins to blow in the late night or early morning, and why it ceases to blow in the afternoon, is obvious. In the late night and early morning the monsoon influence, which brings the sea-breeze in steadily to land, is at its least in consequence of the land being then most cooled by radiation; and it is, therefore, at that time most easily conquered by its fitful and boisterous antagonist. In the afternoon, on the other hand, the monsoon influence is at its most, on account of the strong upcast then engendered over the heated land, and it is, therefore, at that time most able to contend with success against the antagonistic current. This hot wind is exceedingly parching and dry. This is due to the fact that it is an air-current which has come sweeping along over the broad tropical surfaces of the arid interior of the continent. It is, indeed, primarily fed from the great equatorial upcast of the atmosphere, that deposits the tropical rains as it rises and then turns over to flow back to the higher latitudes. The air is so dry that the leaves on living plants shrivel up under its touch. The dryness of

these winds is even greater in the winter season, although their temperature is not then at its highest, than it is in summer; and this, no doubt, is one principal reason why thunderstorms far more frequently attend upon the hot winds in summer than they do in winter. The degree of humidity indicated by the wet and dry bulb thermometers when a hot wind is blowing varies between 25 and 52 degrees of moisture. But on rare occasions it is so great that the ordinary tables employed in reducing the observations of the dry bulb and wet bulb do not suffice to give the indication required. On the occasion of the highest temperature observed with a hot wind, which occurred December 30, 1865, and which was 97·6° of Fahrenheit, the degree of moisture probably did not exceed 20 degrees, with somewhere between three and four grains of aqueous vapour to the cubic foot of air, instead of eighteen degrees, which there would have been in fully-saturated air at the same temperature.

To mere passing and casual observation the hot winds in Natal seem to blow indifferently, and without order or law, at all periods of the year. They appear to be just as likely to occur in winter as in summer; and in one month as in any other. If, however, an exact record be made of the number of times the hot wind blows in each month of the year, and an average of these be then taken, a definite progression and law at once appears, which in some measure refers the occurrence of the phenomena to its true cause. Thus the following statement gives the exact number of times a strong hot wind was experienced in Pietermaritzburg during eight years:

Month.	1858	1859	1860	1861	1862	1863	1864	1865
January	2	1	1	0	1	2	3	2
February	1	2	3	0	1	0	2	1
March	4	1	0	0	0	0	0	1
April	0	2	0	1	1	0	0	3
May	0	1	3	1	3	1	0	1
June	0	3	0	1	2	0	1	0
July	2	2	0	2	4	4	2	3
August	4	2	0	2	7	2	5	4
September	4	7	3	4	8	5	6	4
October	1	7	4	3	8	2	5	4
November	2	3	1	3	4	3	5	3
December	1	5	1	0	1	2	2	2

A mere inspection of this table at once shows that the hot wind blows more frequently in the months of August, September, October, and November; and that, therefore, it is in some degree ruled by the march of the season. If, however, the average for each month in the entire season be made by adding together the columns of numbers for each month and dividing the sum by 8, the law of progression becomes very much more marked. Thus the series of numbers procured by the process is for—

		Times
January	Hot wind blows	1·5
February	,,	1·2
March	,,	0·7
April	,,	0·9
May	,,	1·2
June	,,	0·9
July	,,	2·4
August	,,	3·2
September	,,	5·1
October	,,	4·2
November	,,	3·0
December	,,	1·7

From this statement it, therefore, unmistakably appears that the hot wind of Natal is a season-phenomenon,

that the influence which brings it about is in its maximum of power in the month of September, and that from this month the influence declines gradually in energy through the opposite series of months, in both directions, until it is at its minimum from March to June. The upper north-west land-current has most development in the early months of summer, when the vertical sun is making its steady march over the land to the higher and higher parallels of latitude, and it has its least development in the early months of winter, when the vertical sun is progressing over the land to the lower and more remote parallels of latitude.

The following table gives the mean, the highest, and the lowest readings of the standard barometer at Pietermaritzburg, for each year in a series of eight years:—

Years.	Mean in inches.	Highest in inches.	Lowest in inches
1858	27·786	28·304	27·215
1859	27·863	28·474	27·415
1860	27·920	28·303	27·429
1861	27·920	28·303	27·392
1862	27·876	28·401	27·410
1863	27·924	28·362	27·369
1864	27·922	28·423	27·470
1865	27·934	28·431	27·342

The readings of the barometer, indicating the diurnal wave, for the same eight years, for nine in the morning, three in the afternoon, and nine in the evening, expressed as a mean annual quantity, were—

Years.	At 9 A M	At 3 P.M	At 9 P.M.
1858	27·809	27·678	27·830
1859	27·909	27·830	27·914
1860	27·941	27·867	27·946
1861	27·946	27·869	27·955
1862	27·899	27·819	27·912
1863	27·934	27·861	27·942
1864	27·954	27·861	27·953
1865	27·958	27·883	27·961

The mean pressure of the atmosphere, indicated by the barometer at Pietermaritzburg, at a height of 2,095 feet above the sea, during eight years, derived from 2,920 observations, was 27·891 inches. The highest reading of the barometer during the period was 28·474 inches; the lowest reading, 27·215 inches. The extreme range of atmospheric pressure during eight years was, therefore, 1·259 inches, or 0·591 of an inch less than the extreme range at London, which is 1·85 inches. The average range of atmospheric pressure for one year was 0·991 of an inch. The well-known law that the oscillations of atmospheric pressure are less in amount between the tropics, or near to them, than they are in higher latitudes, is thus strikingly observed in Natal. The difference of the altitude of the editor's observatory and of the mean sea-level at the port was determined by a long series of simultaneous observations made with a pair of compared standard barometers. The exact latitude of the observatory was 29° 36′ 13″ south. Its longitude was 30° 21′ 34·5″ east.

The mean temperature for each year of a ten-year series at Pietermaritzburg was—

In 1858 . .	64·90	In 1863 . . .	64·40
„ 1859 .	64·95	„ 1864.. .	61 50
„ 1860 . . .	64 43	„ 1865 . . .	65·80
„ 1861 . . .	64·27	„ 1866 . . .	65·10
„ 1862 . . .	64·47	„ 1867 . . .	63·90

The mean temperatures for each month of the year, in the same series of years, was—

January . .	71·6	July . . .	55·7
February . .	71·8	August . . .	60·3
March . . .	69·7	September . .	64·8
April . . .	65·0	October . . .	66·1
May . . .	58·8	November . .	69·4
June . . .	55 1	December . .	70·3

The highest air-temperature recorded at Pietermaritzburg during this ten-year period was 97·6. This occurred during a hot wind on December 30, 1865.

The lowest temperature for this period was 29°. The extreme range of temperature in ten years was, therefore, 68·6.

The mean temperature of Pietermaritzburg, derived from the entire series of observations during the ten years, was 64·6°.

The highest temperature recorded in each year of the period was, in

1858 . .	96·8	1863 . . .	91·6
1859 . . .	93 4	1864 . .	94 8
1860 . . .	97·1	1865 . . .	97·6
1861 . . .	95·4	1866 . . .	93 0
1862 . . .	95·2	1867 . . .	95·2

The lowest temperature recorded in each year of the series was, in

1858	38·0	1863	35·2
1859	34·0	1864	29·8
1860	31·4	1865	34·8
1861	29·0	1866	29·2
1862	32·0	1867	34·0

The mean highest temperature for each month of the year was—

January	91·0	July	78·2
February	91·4	August	84·7
March	87·4	September	91·6
April	84·5	October	90 7
May	79·3	November	90·7
June	75·2	December	92·3

The mean lowest temperature for each month of the year was—

January	56·0	July	33·7
February	58·7	August	38·3
March	52·6	September	43 3
April	46·3	October	48 2
May	39·5	November	50·1
June	35·5	December	56·4

The mean temperature for each month of the ten years was—

Months.	1858	1859	1860	1861	1862	1863	1864	1865	1866	1867
January	68·3	73·2	70·9	71·3	70·0	72·4	72·8	72·4	74·6	70·6
February	73·3	72 1	73·9	67·8	72·4	71·4	71·5	71·8	74·4	69·9
March	69·4	69·5	71·6	67·8	69·0	70·2	67·5	72·7	69·3	70·6
April	65·6	64·7	65·0	65·3	65·1	66·1	60·1	67·0	67·4	64·3
May	59·5	60·4	60·2	58·9	58·6	57·6	60·4	59·2	58·5	54·9
June	58·6	56·3	56·2	55·5	53·8	53·7	54·1	53·9	54·0	55·2
July	58·1	55·4	54·6	54·4	57·4	57·0	54·9	59·1	52·2	54·7
August	61·3	58·8	59·9	60·4	57·6	59·5	60·0	62·3	63·2	60·3
September	64·4	69·0	62·6	68·1	64·0	62·2	66·3	64·2	66·2	61·0
October	63·8	64·5	65·8	65·1	66·4	65·9	66·6	69·1	64·4	69 6
November	68·2	68·0	64·4	66·9	68·0	66·4	67·4	67·4	68·6	66 7
December	69·3	71·5	68·1	69·8	71·4	70·5	72·5	70·6	70·5	69 8

The highest air-temperature for each month of the ten years was—

Months.	1858	1859	1860	1861	1862	1863	1864	1865	1866	1867
January .	93°0	90°4	92°6	89°2	87°4	91°4	91°6	86°8	92°6	95°2
February .	96·8	93·4	97·1	84·2	89·0	88·4	86·5	93·0	93·0	93·5
March .	91·0	85·2	92·8	87·2	85·0	85·8	83·2	90·2	88·2	85·8
April .	85·0	83·8	86·2	89·5	87·2	83·0	77·2	85·0	87·0	82·0
May . .	79 0	78·8	82·4	78·8	76·8	76·8	77·8	85·2	78·0	80·0
June . .	78·2	74·2	77·0	76·0	75·8	73·2	72·2	71·2	77·2	77·0
July . .	81·0	77·0	75·8	80·8	82·2	75·0	79·2	82·2	73·5	76·2
August .	89·8	84·3	79·8	81·6	88·4	81·4	82·4	86·4	89·2	84·2
September .	90·0	86·1	90·2	95·4	95·2	92·2	94·2	94·0	86·0	93·0
October .	89·0	86·1	87·2	93·0	95·0	84·8	94·8	96·0	89·2	92·5
November .	88·5	89·5	84·4	93·4	89·8	94·6	90·6	97·2	91·8	88·0
December .	92·0	93·4	89·2	93·0	90·2	91·2	91·8	97·6	90·2	95·2

The lowest air-temperature for each month of the ten years was—

Months.	1858	1859	1860	1861	1862	1863	1864	1865	1866	1867
January .	52°0	61°0	56°4	51°8	57°4	59°0	58°2	56°6	57°8	50°0
February .	56·0	59·2	61·8	55·8	60·0	58·0	59·0	58·0	61·2	58·0
March .	42·0	52·7	53·2	48·8	54·2	54·4	53·6	58·6	54·0	55·0
April .	43·5	40·2	49·0	45·2	43·6	50·0	45·2	53·8	50·0	43·0
May .	38·0	41·9	41·2	36·4	39·2	40·8	44·0	35·8	38·2	40·0
June .	39·3	37·2	35·6	35·0	32·0	35·2	37·8	34·8	34·8	34·0
July .	38·0	34·8	31·4	29·0	37·0	36·4	29·8	37·2	29·2	34·2
August .	43·0	37·2	38·6	35·0	34·8	36·8	40 6	43·0	35·0	39·0
September .	42·0	43·7	42·6	50·0	41·0	38·0	48·8	41·8	44·2	41·0
October .	50·5	51·0	50·2	47·0	46·2	49·2	50·6	45·2	45·2	47·0
November .	52·4	53·4	45·6	52·0	55·8	50·2	53·0	45·2	44·2	50·0
December .	54·6	57·3	57·0	54·4	59·6	57·2	60·2	52·2	54·5	57·0

During the 3,652 days comprised within the ten year series of observations there were—

103 days, or, on the average, 10 days per year, on which the thermometer rose above 90°.

417 days, or 42 per year, on which it rose above 84°.

2,436 days, or 244 per year, on which it rose above 70°.

There were 109 days, or 11 per year, on which the temperature did not rise to 60°.

There were 215 nights, or, on the average, 22 nights per year, on which the temperature fell below 40°.

998 nights, or 100 per year, on which the temperature fell below 50°.

2,268 nights, or 227 per year, on which the temperature fell below 60°.

There were 69 nights, or 7 per year, on which the temperature did not fall below 70°.

There were 10 nights, or, on the average, 1 night per year, in which the self-recording instruments indicated frost 6 feet above the ground.

The air-temperature in Natal is subject to frequent and sudden vicissitudes, and these are more marked at Pietermaritzburg and amongst the hills than they are in the lower coast-region. The great changes of temperature also occur principally between one day and the next in the summer season, but between successive days and nights in the winter season. The mean temperature of the day jumps fitfully up and down during the season of summer. The mean temperature of the day, on the other hand, moves evenly along in the winter season, but there is then considerable difference between the temperature of day and night, and the daily range of temperature is accordingly large. The reason for this remarkable and interesting peculiarity is the frequent intervention of the cooling influence of dense cloud and rain in the season of summer, and the almost uninterrupted presence of clear skies in winter, allowing the full influence of sunshine to tell upon the ground by day, and the full power of radiation to come into play between sunset and sunrise.

A series of comparative observations instituted between the observatory at Pietermaritzburg, 2,095 above the sea-level, and at the port near the sea-level, yielded the following comparison :—

Months.	Pietermaritzburg (2,095 ft. above sea-level).			Durban (sea-level).		
	Highest in Month.	Lowest in Month.	Mean of Month.	Mean of Month.	Lowest in Month.	Highest in Month.
January .	93°0	52°0	68°3	74°2	57	93
February .	96·8	56·0	73·3	77·0	61	91
March .	91·0	42·0	69·4	73·6	51	91
April .	85·0	43·5	65·6	70·9	47	89
May .	79·0	38·0	59·5	64·0	44	83
June .	78·2	39·3	58·6	63·6	48	86
July .	81·0	38·0	58·1	62·4	45	81
August .	89·8	43·0	61 3	65·2	49	81
September	90·0	42·0	64·4	67·1	47	87
October .	89·0	50·5	63·8	65·9	56	84
November	88·5	52·4	68·2	72·0	55	93
December.	92·0	54·6	69·3	74·0	55	92

The mean annual temperature for the year 1858 was—

At Pietermaritzburg	64·9
At Durban	69·1

Giving a mean temperature on the coast 4°·2 higher than that of Pietermaritzburg, 2,095 feet above the sea-level.

The consequence of this difference of 4° of mean temperature is that the coast climate and the hill climate have an altogether distinct character. The one is semi-tropical, and the other approximately temperate. The pine-apple, the banana, the sugar-cane, arrowroot, and coffee ripen with the utmost facility along the coast. Neither the pine apple, the banana, nor the sugar-cane ripen in the same way as high as Pietermaritzburg.

But on the other the orange ripens at this elevation, and at the same time the apple, peach, mulberry, loquat, and granadilla flourish side by side in the fruit-producing season, and the gardens are gay, a good part of the year; with the flowers of the oleander, brugmansia, ipomea, passion-flower, and night-blowing cereus. Tobacco and cotton can both be cultivated productively. The blue-gum-tree of Australia has almost taken possession of the ground, and attains readily a height exceeding 100 feet in little more than a dozen years. Maize, perhaps, deserves to be marked before all other vegetable productions as the staple food-crop of the land, for it is grown remuneratively under the rudest cultivation from the declivities of the higher mountains to the very borders of the sea. On the higher hills the grain-crops and root-crops of temperate climates can be reared under appropriate and skilful cultivation.

In approximately tropical lands like Natal the extremes of the opposite seasons are very materially softened, it will be remembered, by the diminution of the length of the summer day, and the diminution of the length of the winter night. Thus, in Natal, the difference of the midsummer and midwinter day is only four hours. The sun only rises two hours later, and sets two hours sooner, in midwinter than in midsummer. The midsummer sunrise is about five, and the midwinter sunrise about seven. The midsummer sunset is at seven, and the midwinter at five. In Natal this most acceptable softening of the extremes is very materially aided and furthered by the special peculiarity of the abundant cloud, rain, and evaporation of the summer, and equally abundant clear sunshine of the winter.

CHAPTER IV.

WILD ANIMAL LIFE.

NEARLY two centuries ago some shipwrecked English sailors made an undesigned and undesired visit to the neighbourhood of the natural harbour which serves as the port of Natal at the present day, and described the abundance of animal life which they encountered in the following words:—'There is no lack of elephants, rhinoceroses, lions, tigers, and leopards; many kinds of large and small centipedes, toads, and frogs abound. Elands, harts, redboks, and crocodiles are numerous. Geese, ducks, pigeons, red and brown partridges, pheasants, and wild turkeys are abundant, and also crested cranes, many birds, and all kinds of fish.'

Some of the most noble and distinguished individuals of this old 'sailor's catalogue' of indigenous animated creatures have now retired from the coast regions of Natal before the advancing footsteps of pale-faced man and the strengthening forecasts of civilization. But sufficient traces of the old 'wild beast' time still remain within the boundaries of the colony to make its record of wild animal life one that retains considerable charm for the naturalist. It is even now but a very few years since the merchant of the seaport of Durban, who rode up into the thick bush which covers the Berea-hills,

that look down upon the town immediately to the north, had a fair chance of having to pull up in his canter to give precedence to a file of half-a-dozen elephants (*elephas Africanus*), who desired to cross the line of his path. When the Dutch farmers laid out the streets of Pietermaritzburg, that is in 1839, the mimosa bush seven miles from the town, on the main approach from the coast, was a favourite resort for these real 'monarchs' of the African wilderness. Old settlers about Durban still tell of the days when they could occasionally meet an elephant taking his evening stroll in the tangled thicket of evergreen trees which extends from the Umgeni River towards Verulam, and which is now traversed by the main road of access to the north coast plantations. The old monarch is now, however, only seen in Natal, on the rarest occasions, in the deepest recesses of the Tugela valley, which forms the northern frontier of the colony, and which on one side of the river ascends into Zulu-land. The reputed monarch of the wild land, the African lion (*felis leo*), also, upon very rare occasions, makes a mistake and follows some herd of antelopes that have wandered down from the bare pastures of the inland plains in search of the fresh grass of the lower region. But he generally accomplishes a rapid nocturnal sweep of survey and observation, levying some black-mail from the farms and kraals as he goes; and then, having discovered his mistake, he beats a rapid retreat over the mountains and disappears. Within a dozen years the writer has passed the fresh spoor of a vagrant lion, effecting a flying survey of the central uplands of the colony in this way, in the advanced season of winter. The African lion is not properly a denizen of the 'bush' or 'forest.' He lurks

in the lower cover that fringes the sides of streams, and hunts in the open plains; and it is curiously remarked that when he appears on these rapid visits in the neighbourhood of settled districts he has entirely given up his old custom of proclaiming his presence at night-fall and in the early watch of the morning by his reverberating roar, as unsuited to the changed condition of things, and creeps silently through the preserves that he marks for his black-mail. There are two well-marked varieties of the lion in the South African districts—one of a yellowish hue, and one brown. The brown variety, especially when he sports a 'black mane,' seems to be the most ferocious and powerful. Animals of this class have been known to carry a two-year-old heifer while pursued by horsemen for five hours, without letting the body of the heifer touch the ground for more than an accidental and passing brush, and also to convey a horse for a full mile from the place where it was first seized. The lion generally walks off quietly when he is disturbed by man, with what has been well described as 'a careless air, that seems to indicate he does not want a fray, but is ready to fight if he is pressed to do so.' If not pursued he soon quickens his first dignified retreat into a trot and then bounds away. If followed he crouches with his face towards his pursuer, and at last charges home if the attack is persevered in, and, of course, then has the best of the encounter unless he is happily intercepted on the way by a well-aimed bullet.

The real terror of the South African jungle or bush, however, is the leopard, either the *felis leopardus* or *felis pardus*, universally known to the Dutch settlers as 'the tiger.' He is also a very large and powerful

animal, and is unfortunately endowed with great activity; he is in reality more formidable than the lion, because he dwells habitually in the bush and tangled forest and climbs the trees. He makes his lair in the densely-wooded ravines, where it is almost impossible to follow him, and from these ravines comes forth at night to scour the country round, and too often to prowl about the homesteads of settlers. He is still continually found in Natal on account of the almost insurmountable difficulty of dislodging him from his haunts. Every now and then neighbourhoods where there is good and suitable cover near are visited, and made to pay a tax more or less heavy before the unwelcome intruder can be caught. In such cases strychnine is generally the last resource of the settler, and is given in a tempting piece of flesh laid in the track of the nocturnal visits. It is almost certain that both the panther and the leopard are included in the generic term 'tiger' of the old Dutch colonists, and that both are still encountered in Natal. The two species were known but as one animal to Linnæus. The Dutch Boers have, therefore, a very distinguished precedent for their own classification. The leopard appears, however, to be the smaller animal of the two, and to have its spots made up of a cluster of still more minute dottings. The leopard not infrequently measures from eight to nine feet from the nose to the tip of the tail. It is said that the leopard and panther of South Africa both have an especial weakness for 'sucking-baboons.' There are also tiger-cats, or leopards of much smaller size, in the colony, which, although occasionally troublesome and destructive to the smaller kinds of live-stock on a settler's farm, are not really formidable. One of these is about the size

of a small greyhound, and is probably the cheetah, or hunting cat (*felis jubata*), of the Cape. Another, a smaller animal about two feet long without the tail, and 12 inches high, appears to be the serval (*felis serval*) of the Cape. There is also a Kaffir cat (the *felis Caffra*), entirely distinct from the wild form of the domestic cat, which is found in flats covered with long grass or with low growth of brushwood. It preys upon smaller animals and birds that make nests on the ground. It is very fierce when attacked, and for the most part seeks refuge in the burrows of other animals.

The rhinoceros, of which four kinds are found in South Africa—namely, the black rhinoceros with unequal horns, the black rhinoceros with equal horns, the white rhinoceros, and the rare long horned white rhinoceros—have quite disappeared from Natal, although some of them may still be met within an easy ride on the Zulu-land side, beyond the Tugela. The giraffe is only seen in the high plains of the remote interior, beyond the Drakenberg. The buffalo (*bubulus Caffer*) could be found by the hunter within a few hours' ride of Pietermaritzburg within a few years. He is still sometimes met with in the high and remote districts of the colony, but for the most part has now to be sought beyond the mountains. The buffalos may generally be safely approached when feeding in herds, which scatter in all directions when they are attacked. But the solitary buffalo is apt to be a very awkward and dangerous customer. It is his habit to lie close in the cover of the bush, and then to charge down home, on some sudden impulse, carrying away everything before him. There are instances on record of a buffalo driving his horns clean through a horse's breast and out through

the leather of the saddle. The custom of the Cape buffalo to feed on the high pastures in vast herds, comprising many hundreds, is well known.

The hippopotamus (*hippopotamus Capensis*), or river-horse, essentially and exclusively a native of Africa, may be still seen in undimmed glory in Natal. His habit of spending a very considerable portion of his time, and especially his days, out of sight in deep water, and his vegetable diet, very largely composed of water-plants that are of use to no one but himself, have favoured his lingering in his old haunts for a longer time than most of his compatriots of similar bulk. There is a 'sea-cow lake' near the lower reaches of the Umgeni, but a few miles from the seaport, which acts as a sort of 'Dead Sea' or catchment-basin for the little Umhlanga River. In this lake the hippopotamus may still be encountered, at odd times and in incautious moments, disporting in the dusk hours of the late evening. All along the coast he is apt at any time to turn up in the lagoons of the river-mouths, where he travels by land over paths of his own in the early mornings from river to river, hiding himself in the deep water-pools by day, with only the point of his nose shown occasionally, like the extremity of a dark log of wood, on the still surface. In 1862 the writer was sleeping, camped out under canvas, with a friend, on the bank of the lagoon of the Umzimba River, about three miles beyond the Umtamvuna, now the southern frontier of the colony, and about half-a-mile from the sea, when he was roused by the native servants, in the earliest blush of dawn, with the report that a sea-cow and her calf had just been sniffing at the tent-curtain, in puzzled inquiry as to what the new white mushroom could be that had so suddenly

sprung up in the track of one of her private paths from her Umzimba bathing-ground to the lagoon beyond. When the startled sleeper had sufficiently collected his wits to look out from the tent the interesting visitor had disappeared, but a few instants afterwards her nose rose from the still water, a couple of hundred yards away; and she began a further investigation into the facts of the case from her new point of observation, which had many strong points of recommendation, and was singularly safe, as it is very difficult indeed to do more than give a little unusual excitement to the nose of a hippopotamus, even with a well-aimed bullet, so long as the animal is immersed in the water. The hippopotamus, unlike some of the earliest forms of iron-clads, carries its armour-plates quite to the keel. This animal must unquestionably have much of the astute sagacity of the pachyderm. It wears a most curious expression of attentive observation and 'canny' shrewdness in its small widely-planted eyes, when these are well seen just peering out from the translucent veil of a pool of still water. The animal is very harmless, and keeps itself well out of the way, unless roused to efforts at self-defence, when it occasionally practises some rather clever tactics of its own, such as turning a boat topsy-turvy in the water, and securing to itself the undoubted advantage of finishing a struggle for life in an element that is so well adapted to its own motive powers and organisation. The hippopotamus, on account of the slowness of its respiration, is able to remain surprisingly long periods under water, and only needs to raise just the extreme tip of its snout into the air when it rises to breathe. Le Vaillant stated that he had seen the hippopotamus actually 'walking' leisurely along at the

bottom of the Great Fish River. If this is the case it must be admitted that he has pre-eminent qualifications for the 'diver's' work. On the whole he has some remote resemblance, if seen in half-transparent water, to his cousin of the same craft, the biped 'diver,' when he is artificially 'pachydermed' for his submarine task with his boots, water-proofs, and helmet. Pending his further education in the useful application of the diver's craft, the hippopotamus is chiefly of use to man for the beautiful ivory which his large grinding-teeth supply to the dentist, and for the thick hide, which is fashioned by mere paring with the knife into waggon-whips and horse-whips, generically known as 'shamboks.'

The hyæna is still abundant in Natal, and may be heard howling on moonlight nights round cattle-kraals, often in quite near proximity to the townships and village settlements, and even occasionally on the outskirts of Pietermaritzburg. There are three distinct kinds, which may any of them be met with, and which are all known to the Dutch settlers as 'wolves,' as the leopards are all 'tigers.' The hyæna crocuta (*Crocuta rufa*), the brown hyæna, of which Natal specimens have been shown in the collection of the Zoological Society of London; the hyæna villosa, or maned jackal (strand-wolf or coast-wolf of the Dutch), which is probably the South African representative of the striped hyæna—a species that Dr. Andrew Smith considers is not found in South Africa; and the hyæna maculata (*H. Capensis*—the tiger-wolf of the Dutch). The hyænas linger about the outskirts of extending civilization very pertinaciously, and, as they are bold and rapacious animals, are even more annoying pests to colonists than some of the more

powerful wild beasts. The spotted hyæna is somewhat smaller than the striped hyæna, but is very voracious and endowed with fox-like cunning. Its mode of attack is to howl and grimace until it scares its prey into flight, and then to run it down. But it devours dead animals as well as preying upon living ones, and it is said that it even passes by the outer circle of calves in the kraals of the Mambookie Kaffirs to take the infants of the women silently from under the karosses by the mother's side. In his account of the miserable state to which the Natal tribes were reduced during the occupation of the territory by Chaka, Mr. Shepstone alludes to this brute as having become so fierce by feeding upon human flesh that it not only carried off children, but even attacked men and women of adult stature and age. There is no doubt that the 'spotted hyæna' is an unmitigated 'cannibal.' He consumes without remorse any of his companions that chance to have been wounded and reduced to helplessness.

The jackal (*Canis aureus*) is spread over the whole continent of Africa, and is, therefore, encountered in the wilder parts of Natal. He hunts in packs, burrows in the earth, and most affects small animals, such as the denizens of the poultry-yard, but he does not despise larger game when fair opportunity serves. It is said that three of these so-called 'wild dogs' will tear down and literally consume an antelope weighing 60 lbs. in a few minutes. The animal's proverbial reputation of acting as the 'lion's provider' probably hangs upon the fact that the choral yell of a pack of jackals serves as a very effectual notice to the lion that there is prey at hand, and that the jackal does not hesitate to dispose of any fragments that the lion leaves. The animal has a

strong liking for carrion, and enjoys the reputation of performing good work as a scavenger.

The aarde-wolf, or earth-wolf (*Proteles Lalandii*), which was first procured by Mons. Delalande from the neighbourhood of Algoa Bay, and which is found in the wild districts of Natal, is not properly a hyæna, as it was originally conceived to be, under the name 'Hyæna venatica.' It is an animal that appears to be somewhat intermediate in its zoological nature between the hyæna, the jackal, and the dog. It has a pointed muzzle, and is about the size of a full-grown fox; but it has longer legs, larger ears, and a shorter tail; and, beyond this, has a long, stiff, erectile mane running the whole length of the back, and a general aspect that gives it very much the look of a young and half-grown hyæna. Its habits most resemble those of the fox. It is a nocturnal prowler, and makes burrows in the ground, with an abundant provision of postern outlets for use in case of need. Several individuals very commonly inhabit one common burrow. This curious animal has been held by some zoologists to be properly a dog, and has been named the 'canis pictus;' and in support of their views it has been said that the domestic dog (*Canis familiaris*) acknowledges the kinship. It is asserted that the dogs of a hunting party, when hounded on to hunt the aarde-wolf, will start in pursuit, but when they come up with him exchange friendly greetings, and, after due investigation, apologise for their blunder, and return with an air of having made a mistake, although the same dogs will follow a spotted hyæna relentlessly to the death.

The animal which is known in the Natal uplands as the 'prairie-pig' ('valke-vark' of the Dutch) is

properly the African wart-hog, or phacochœrus (*Phacochœrus Æthiopicus*). It is distinguished from the true pig, to which it is nearly allied, by large tusks, which are directed sideways and upwards, and by the presence of projecting warts beneath the eyes. The wart-hog is essentially an herbivorous animal, and its method of grazing is to creep along on its bent fore-feet, and this posture to prize up the roots of plants with its enormous canine teeth or tusks. It is an inhabitant of the bush, and is very active, and when pressed by the hunter shelters itself in the burrow of the jackal, from which it has the awkward habit of throwing itself out backward when it is routed from its retreat. It weighs about 80 lbs., and furnishes excellent pork. There is also another kind of wild pig in the colony known to the Dutch settler as the 'bosch-vark' (*Choiropotamus Africanus*), which more nearly resembles the wild boar, and sometimes weighs as much as 180 lbs.

The porcupine (*Hystrix cristata*) is not uncommon in Natal, but he takes care to be very rarely seen, as he keeps close in his underground burrow during the day, and only comes out at nightfall to pasture upon roots, fruits, and leaves, which are his proper food. A somewhat destructive animal, which is unfortunately too well known on the coast as the cane-rat or ground-rat, that feeds upon the sugar-canes, is properly more of a porcupine than a rat. It is a species of aulacodus (*Aulacodus Swinderianus*)—a genus which has been placed by zoologists in the same group of rodents as the *hystrix*. The squirrel of Natal is probably identical with the *Sciurus Cepapi*, alluded to by the South African zoologist, Dr. Smith, as inhabiting the interior districts above Natal. There is a species of mole

encountered everywhere. The two species of weasels known as inhabitants of South Africa, and therefore, most probably, identical with the weasels of Natal, are the *Gorilla striata* and the *Mellivora Ratel.* The Cape otter is the *Aonyx Delalandi*, and is most probably the otter which works along the banks of the Natal streams.

Two hares well known to the Dutch settlers, and called by them 'vlakte-haas,' (*Lepus Capensis*) and the burrow hare (*Lepus arenarius*), are found in Natal. A very engaging little rodent, familiarly designated the rock-rabbit, which nestles in crevices and crannies of the rocks, is the *Lepus saxatilis* of zoologists.

Rats and mice, as a matter of course, are in great force all over the African continent. The best-known rat of South Africa is the heavy-eared rat (*Mus dolichurus*). The lineated mouse (*Mus pumileo*), the free-mouse (*Dendromys typicus*), and the black-backed mouse (*Dendromys melanotus*) are probably all denizens of Natal. Two field-mice, the vlei-muis (*Euryotis irroratus*) and the vlakte-muis (*Euryotis Brandeii*), are familiar acquaintances of the Dutch. *Otomys typicus*, *Otomys albicaudatus*, *Chenodactylus Massoni*, *Chenodactylus echymina*, *Petromys typicus*, and *Pedeles Capensis*, all appear in Cape catalogues. The *Pedeles Capensis* is familiarly known as the 'jumping *hare.*' It sits upright when feeding, like the squirrel, on its tiny powerful hind-legs, leaps thirty feet at a bound, and is very quick and powerful in burrowing.

The ant-eater of Natal, the aard-vark or earth-pig of the Dutch settlers, is a very curious and interesting animal. It is, however, not a true ant-eater (*Myrmecophaga*), properly so called, but an orycteropus

(*orycteropus Capensis*), a genus now separated by zoologists from the myrmecophaga, and held in character and organisation to approach quite as much to the armadillos as to the myrmecophagæ. Its general aspect is that of a small short-legged pig about three feet and a-half long, with a thick, tough hide sparingly furnished with stiff, scattered hairs. The animal lives in deep burrows in the ground wherever there are ant-hills in good quantity, and shows himself on the rarest occasions. The only way in which he can be captured is by digging him out of his burrow, and this is not easily done, as he is so expert a digger that he can make his way into the earth faster than most spades can follow him. He is, however, slow of foot when *on* the ground, and therefore rarely ventures out from his burrow by day, or ever removes far from it. He comes out to feed at night; and, crawling to the nearest ant-hill, scratches a hole in its side just large enough to admit his snout, and then inserts into the hole his long slimy tongue. The ants in the interior of the nest rush up to repel the intrusion, and are retained by the slime upon the surface of the tongue until it is drawn back into the mouth of the ant-bear, to be returned again and again for a fresh supply. The ant-bear, or earth-pig, spends the greatest part of his life in sleeping and eating, and he accordingly keeps himself in very good bodily plight. His flesh is much esteemed amongst the Dutch settlers, who convert his hind quarters into hams.

The great family of the wild animal life of South Africa which, before all else, furnishes occupation and sport to the ordinary hunter who does not aspire to royal game is, however, that of the antelope. Twenty-six distinct species of this family are specified by recent

zoological authorities at the Cape as belonging to South Africa—namely:

1. Koodoo—*Strepsiceros Capensis.*
2. Gemsbok—*Oryx Capensis.*
3. Sable antelope—*Ægocerus niger.*
4. Roan antelope—*Ægocerus equina.*
5. Eland—*Boselapus*, or *antilope, oreas.*
6. Waterbok—*Kobus ellipsiprymnus.*
7. Hartebeeste—*Alcephalus Caama.*
8. Bastard hartebeeste—'sayssaybe'—*Acronatus lunatus.*
9. Pallah—*Antilope melampus.*
10. Fontibok—*Gazella pygarga.*
11. Blesbok—*Damalis albifrons.*
12. Springbok—*Gazella euchora.*
13. Bushbok—*Tragelaphus sylvatica.*
14. Rheebok—*Redunca capreola.*
15. Rietbok—*Redunca eleotragus.*
16. Small rietbok—*Redunca Isabellina.*
17. Rooi rietbok—*Redunca Lalandii.*
18. Ourebi—*Antilope Scoparia.*
19. Duiker—*Cephalopus Grimmia.*
20. Steinbok—*Calotragus campestris* (*tragulus*).
21. Klipspringer—*Oreotragus saltatrix.*
22. Grysbok—*Calotragus melanotis.*
23. Bluebok, or kleinebok—*Cephalopus cærulea.*
24. Rooiche.
25. Gnu—*Catoblepas gnu.*
26. Wildebeest—brindled gnu—*Catoblepas Gorgon.*

Ten of these antelopes are known in Natal, and of the ten four are large animals. The hartebeeste (*Alcephalus Caama*) is common on the Umvoti flats

during the winter season, and on other open plains of a similar character. It is a magnificent antelope, weighing sometimes as much as 350 lbs. It lives entirely in the open pastures, and when hunted has to be cut off with a fair, hard run. Both males and females carry horns, which grow upward and slightly outward for two-thirds of their length and then have their points turned backwards. They feed in large herds, and run with a heavy gallop, stopping frequently when well ahead to look at the pursuer. When brought to bay, the hartebeeste charges bravely with its horns, dropping on its knees first and then rushing forwards. Its flesh is much esteemed for its fine grain and high flavour.

The eland (*Boselapus oreas*) is occasionally encountered in the high uplands of the colony, in the cool months of July and August, when it comes there from beyond the mountains for better grass. It is a still larger animal than the hartebeeste, and a heavy feeder, being quite exceptional among the antelopes for its tendency to grow fat. The full-grown bull is occasionally 8 feet long and 5 feet high at the shoulder, and weighs as much as a thousand pounds. The elands live in the open pasture and are easily run down. The Dutch sportsmen not uncommonly contrive to make them carry their own meat home, by driving them close to the homestead before they shoot them down. They are very gentle and unsuspicious, and feed in large herds on the open plains, allowing the hunter to get into the midst to select the fattest game. The meat which they yield is very excellent. They have strongly-marked manes running down the entire length of their backs. Their thick, heavy horns are 18 inches long, nearly straight until within 3 inches of the tips, when

they are bent outwards, and have a thick, spiral wreath passing round them in two complete turns. The horns of the female are longer and slimmer than those of the male.

The bushbok, or, as it is sometimes called, bush-ram (*Tragelaphus sylvatica*), lurks in the thick covers of the colony, and shows fight when brought to bay, barking at its assailant like a dog. It is a dark-brown spotted animal, with a thick mane down its back. It never quits its cover excepting on moonlight nights or in the early hours of the morning, when it feeds on the borders of the forest or makes incursions into neighbouring gardens and fields. It is a slow runner and easily caught on open ground, but passes readily through the thick undergrowth of the bush with its horns crouched back out of the way along the sides of its neck. It is about four feet and a half long and stands two feet and a-half high at the shoulder. Its horns are 12 inches long, turned very slightly outwards and spirally twisted. The bark of this animal is often followed in the bush under the impression that it proceeds from a dog and therefore indicates the near neighbourhood of a settler's house.

The blesbok (*Damalis albifrons*), so called on account of being branded with a white mark between the horns, is occasionally encountered at the base of the Drakenberg during the three coldest months of the year, having then strayed down in search of the Natal winter-grass. It has horns 16 inches long, pointing upwards and outwards.

Of the smaller antelopes, with slim, graceful bodies and slighter horns, the ourebi (*Antelope scoparia*) is spread all over the colony. It lives on the open plains

through the summer, and seeks covered shelter in the winter. It keeps very much to one locality, squats close on the ground, starts up almost under the horses' feet, and then runs in circles. It lives generally in herds, but these straggle about over the plain, and the animals when alarmed scatter apart in all directions. The ourebi stands about 22 inches high, and weighs about 30 lbs It furnishes one of the most esteemed kinds of venison. Its horns are not more than 5 inches long, ringed at the base, and upright, inclining slightly backwards.

The duiker or diver (*Cephalopus Grimmia*), a dark grey animal slightly smaller than the ourebi, is scarcely less abundant in the colony. It lives entirely in the cover, but takes the open ground when hunted. It gets its name from its habit of plunging under the bushes in its passage through the forest, instead of leaping over them, after the fashion of other antelopes. When pursued it stands up on its hind legs from time to time, and then dives in under the foliage, to reappear only at some distance. Its horns are about 4 inches long, ringed at the base, and incline slightly outwards.

The rietbok (*Redunca eleotragus*) frequents the reedy banks and beds of dry watercourses. It is a large fawn-coloured animal, standing 34 inches high, and weighing from 80 to 100 lbs. It squats until the hunter is near, and, being a slow runner, then becomes easy game. It is ornamented with very beautiful horns, which are prominently ringed at the base and sharply striated between the rings, and which sweep boldly *forward* in a regular circular curve to very sharp points. There is also a red antelope, in some measure distinct from this, which inhabits the dense bush-covered ground of the coast, and which, possibly, may be the rooi

rietbok (*Redunca Lalandii*) reputed to be a native of the Kaffrarian and Natal coast, but which is considered by some authorities to be only a variety of the rietbok.

The rheebok (*Redunca capreola*), the chamois of South Africa, is found on the higher Natal hills. It is a light-grey animal, with a wavy coat, and is very wary and swift, and can only be taken by being chased by one hunter into the toils of a second, who lies in wait in some well-selected place. It feeds in small families of five or six, and plants sentinels on high ground to guard against surprise. It keeps close to the ground when it runs, and moves along with such lengthened strides that it seems to glide over the surface. It is especially fond of rocky glens, mountain passes, and the sides of hills thinly covered with stunted underwood. It has very long, slender, sharp horns, smooth, straight, and placed parallel to each other.

The small bush-buck of Natal (*Cephalopus Natalensis*) is a very beautiful little animal, with short conical horns, and with a body scarcely larger than that of a hare. It is very nearly allied to, if not identical with, the kleene blauw bok of the Cape (*Cephalopus pygmæa* or *cærulea*). It lives in the thick brushwood that fills up the intervals between the larger trees of the evergreen forests of the coast, and feeds on the young shoots and twigs of trees and on grass. The first individual of this species that was seen alive in the zoological collections of England was sent in 1866 by Colonel Bissett, then acting Lieutenant-Governor of Natal, to the Duke of Edinburgh, and was afterwards placed for care in the gardens of the Zoological Society of London.

There are several other of the South African ante-

lopes encountered in the high plains immediately beyond the northern frontier of Natal, although not seen actually within the colony, as, for instance, the noble spiral-horned koodoo, the gemsbok, the waterbok or lechee, the sable antelope, the steinbok, the klip-springer, and the wildebeeste or gnu. The gnu, indeed, occasionally descends for a brief passing visit from the mountains into Natal, and commonly has the lion in attendance when he does so. It is a curious animal, with the neck, body, and tail of a horse, and with forward-curved horns, like tusks, upon its forehead. It flings up its heels, and capers, exactly like a startled horse when alarmed—tossing its head and tail and butting with its horns—and then makes off in a light, rapid gallop in single file. The gnu must, by courtesy, take rank as an antelope of Natal, since it has been adopted as the leading feature in the armorial bearings of the colony.

The baboon of Natal is the chacma (*Cynocephalus porcarius*). It is found in most of the high mountains, and may continually be contemplated sunning itself, in families, with one distinguished patriarch at the head, on rocky ground lying near to inaccessible kloofs and precipices. It is abundant around the Umgeni Falls, and in most parts of the inland districts of the colony there are 'bavian kops,' or baboon mountains, which have been so named in consequence of their being the haunts of these 'dog-headed' monkeys. Nearly all the flat-topped mountains, with inaccessible walls, about the beautiful valleys of Weenen are thickly peopled with these grotesque quadrumans. They are often present in considerable numbers, watching the traveller intently, but without allowing him to have the slightest glimpse

of any part of them until he has moved on to a safe and respectful distance, when immediately the ground he has just passed over becomes alive with a curious crowd, inspecting his footsteps and making the minutest examination of the place, as if to settle the question of what the intrusive stranger can have possibly been after in his visit to their domains. A couple of hours' work with the photographic camera amongst the kloofs is almost certain to cover the ground in this way with a jury of baboons as soon as the apparatus has been removed. A large jury was impannelled on the spot immediately after the photograph which furnishes the picture of the Umgeni Falls was taken by the camera. The Natal baboon is not easily brought into close quarters with strangers of whose character he is imperfectly informed. But he is a very awkward customer when he is accidentally engaged in a personal encounter, as sometimes happens with dogs, of whom he is less shy than he is of man. A single baboon is considered a fair match for a couple of large dogs. He fights with both his teeth and claws, biting and tearing at the same time. A very pretty small monkey inhabits the bush around Durban, and some other parts of the coast. He may be seen prowling about the gardens of the Berea in the earliest hours of the morning, and occasionally appears suddenly swinging himself down into the bush-hedged road on one side, pausing in midway to have a good look at the advancing horseman, and then bounding lightly up into the thick trees on the other side, where the festooned stems of evergreen twiners hang down as 'monkey ropes,' ready for his hand in all directions.

The crocodile haunts the rivers of the coast all along the sea-frontier of Natal, especially where the

stream is prone to swell into deep pools at the time of floods. He appears down to the south as far as the St. John's River, which is his furthest incursion into the cooler parallels of latitude. To the north his limit is not known, and most probably he has a continuous range, quite to the classic ground of crocodiledom, the waters of the Nile. The Natal crocodile appears to be of near kin to, if not identical with, the crocodile of the Nile; but the specific distinctions of this attractive and amiable family of reptiles are imperfectly known even to naturalists. The specific distinctions depend mainly upon the varying degrees of the narrowing and flattening of the muzzle and jaws, which, it is not too much to say, cannot be too narrow for human desires. The Egyptian crocodile (*Crocodilus vulgaris*) is well known to be at home both in the Senegal and at Madagascar, and is generally held to be distributed over the entire continent of Africa. The Natal crocodile may, therefore, be fairly assumed to be the 'vulgar' animal.

Very little thought is given to the crocodiles in Natal when the rivers are low. Horsemen then cross the streams within the easiest reach of their familiar and ordinary haunts without the slightest fear or risk of attack. Thus, for instance, these ugly saurians abound in the lagoons of the Nonoti and Sinquazi at all times, and yet travellers pass those rivers, within three or four miles of the sea, by the ordinary coast-road every day when the rivers are not in flood without getting even a glimpse of either a snout or a tail. The instant, however, the rivers are unduly full, so that the water rises well up to the saddles, or above, the crocodiles become demonstrative enough of their presence, and are apt to be dangerous as well as troublesome. Shortly before leaving the colony the editor crossed

the little Umhlanga River, within a dozen miles of the port, with a gentleman who told him that but a few days before, while crossing the same ford with the river in flood, he had felt annoyed at, and in some measure resented, the unwonted liveliness of his horse in coming up out of the stream ; but when he was well out on the bank he found a large and very formidable gash, from a crocodile's jaws, in his horse's hind-quarters, unpleasantly near to the position of his own booted leg. The reason for this peculiarity is that the crocodile, watching its opportunity, seizes and drags its prey down into deep water and drowns it there, and then brings it up subsequently to consummate the feast when all is quiet and safe from disturbance. It consequently refrains, as a mere measure of prudence, from all operations of a hostile character when the water is not deep enough to enable this subtle and treacherous procedure to be successfully pursued. It is held by some well-informed authorities that the crocodile even hides its game in a suitable subaqueous safe until it is in a fit state for a savoury meal, but, in the face of the brute's wide-throated physiognomy and cavernous jaws, it is somewhat difficult to credit it with so discriminating and epicurean an appetite.

There is a large water-lizard found about the banks of the inland streams, which is in all probability a vegetable feeder, and of a similar character to the 'iguanas' of South America. He is, however, large enough to look somewhat formidable when he is in an ungentle mood. The writer, having one of these big water-lizards, upon occasion, tied up by the leg in his garden at Pietermaritzburg, sent a native servant with instructions to remove the prisoner a short distance to

a more convenient tethering-ground. The Kaffir had untied the rope, and was proceeding to execute his task, when the lizard, seeing his opportunity, cast his eyes upon the Kaffir and opened his mouth as wide as he could. The brute looked for the instant so unpleasantly like to his carnivorous kinsman that the Kaffir discreetly dropped his end of the rope, and fairly bolted in a panic, and the iguana walked off to the Town River, about half-a-mile away, carrying his loosened bonds with him, and there disappeared also, plunging into the stream.

Many pretty lizards, of less formidable dimensions and less threatening aspect—amongst them the long snake-like chalcis, with legs so minute as to be almost invisible—glide about upon the rocky banks of the colony, revelling in the hot sunshine. The chamæleon looks both ways at once from the leaves of the trees. It is currently believed that the chamæleon does not attempt to swim, because he is incapacitated for the exercise by the want of proper consent between the opposite sides of his heterogeneously organised body. This very gentle and attractive saurian is a favourite even amongst the natives, and is never harmed by them, for some superstitious reason. He appears as a beneficent or benevolent actor in some of their legendary fables. A small tree-frog (a species of *hylax*), of very delicate organisation, and almost graceful form, is a worthy associate for the chamæleon, as he is often encountered climbing gingerly from leaf to leaf by his adhesive 'sucking-toes.'

The snakes constitute an important section of the 'wild animal community' that still remains to Natal. They are varied and numerous, although certainly

much less numerous than they were before the civilised and industrial occupation of the territory by Europeans. The Natal python (*Python* or *Hortulea Natalensis*) is found from 16 to 25 feet long, and is a true boa-constrictor, being destitute of poison-fangs, and swallowing its prey whole after it has mangled it and crushed its bones in the folds of its serpentine embrace. It is encountered all along the coast, and is entirely harmless to man, and only formidable to animals that are within the capacity of its swallow. A gentleman who now holds a very responsible and honourable position in the civil service in England, and who was for some time Colonial Secretary in Natal, tells a very good tale of personal adventure with one of these Natal pythons. He was informed by his native attendants, on a certain occasion, of a specimen of large size having been seen to retire into a particular hole in the ground, and he resolved to dig it out. When operations had been carried on for some distance the tip of the monster's tail was discovered, and the whole hauling force of the party was put on to bring the snake out from his lair backwards. Foot after foot of the long writhing body appeared in succession, until the neck was obviously not far from delivery, when the awkward question suddenly occurred, what was likely to follow when the head did come out? Pausing for an instant upon this doubt some of the party relaxed their hold, and the long coils that had been extricated thereupon returned into the burrow like the recoil of a spring, bringing those heels over head after it who still held fast by the tail. Operations were then commenced again *de novo*, but this time a slip-noose of rope

was laid over the hole, and as the neck emerged the loop was drawn tight, and the python was run up to the branch of a tree by the rope, and there it was afterwards shot in the head by a revolver.

A snake infinitely more formidable in Natal than the python, although of very much smaller dimensions, is one that is known principally by its native designation, 'imamba.' This is also essentially a coast-snake, and a dweller in the bush. Two varieties are spoken of, one green, and one of a darker hue. But they are both slender snakes, and described as having 'large heads,' which probably means that they are 'hooded' when engaged in attack. They are 'fanged' serpents, and their poison is very powerful and deadly. It is not this, however, that gives its greatest terrors to this formidable snake, but the further fact that it is a very active reptile, and that it has the well-deserved reputation of both attacking on its own account and of pursuing when not itself assailed. There are sufficiently authenticated instances of its following even horsemen with erected head and fierce hisses, and at a speed that only a good horse can outstrip. Dr. Smith, the most learned of South African geologists, was quite aware of this habit of the South African 'cobras;' and he specified three snakes known to the Dutch colonists of the Cape as illustrating the habit, namely, the 'gee copell,' the 'bruin copell,' and the 'spuugh-slang,' all of which he described as always ready to fight, and as advancing upon the intruder, when their retreat was invaded or threatened, with the head and front of the body erect, with the neck expanded, and with hissing and fierce gestures. He refers to one instance in which he him-

self encountered a species of the *Naia hæmachates* in the neighbourhood of Graham's Town. He accidentally roused the attention of the snake and it immediately raised its head, issued the warning note of a forced expiration, and then advanced upon him, but allowed him to make a precipitate retreat without following him. The spuugh-slang receives its Dutch familiar name from a reputed habit of spitting forth its venom upon its assailants, which the Natal snakes are also said to do. Dr. Smith conceives that this so-called 'spitting' of the snake is really due to the poison being distilled in such abundance from the fangs when the snake is irritated that portions of it are apt to be blown out of the mouth in the forced expiration of hissing. The expansion of the neck which constitutes the 'hood' is effected by the power of the snake to bring forward or expand the loose false ribs of the front of its skeleton beneath the skin when it is roused to anger. The *Naia hæmachates* of Dr. Smith's rencontre, the *Naia rhombeata*, *Naia lubrica*, *Naia Capensis*, and finally the *Naia Haje* itself (Egyptian asp), all appear in the catalogues of South African snakes, and there can scarcely be a doubt that the 'imambas' of Natal are some of these. Dr. Cantor, a distinguished Indian zoologist, who introduced the *Hamadryas* of Bengal as a new genius of the family of the *Naia*, speaks of the fierce *Hamadryas ophiophagus* as being, like the imamba, 'always ready not only to attack, but to pursue,' while other venomous snakes of the country only defend themselves and then retreat; and in referring to the peculiarity which has earned for it its trivial designation 'ophiophagus,' remarks that there is no doubt at all but that it does feed upon

its own kind, as the regular dietary of two specimens that he had some time in confinement consisted of 'a serpent,' either venomous or not, as accident might determine, 'once a fortnight.' He alludes to the chief characteristic of this 'ophiophagous' cannibal as being its exceptional activity, fierceness, and aggressiveness even amongst cobras, and he also makes the pertinent and interesting statement that when at the Cape of Good Hope he heard there of a South African *Naia* which, when captured, had thrown up from its stomach a half-digested serpent, apparently of the *Vipera brachyurus* kind. The fierceness of this snake is, no doubt, dependent in some measure upon the accident of time and circumstance. He must be found both hungry and angry, and possibly also at a particular season of the year, to see him at his best. He is not always an invincible antagonist under other conditions. The writer once had a very stirring narrative of a single combat with one of these aggressive and formidable serpents from one of the parties to the duel, Mr. Lindley, the well-known and highly esteemed American missionary, who resided so long at the mission station near the Inanda. He was riding with a friend in the wild neighbourhood of this station when he came suddenly upon a fine specimen of the 'imamba,' who put up his head and looked at him with an air that the reverend missionary, sworn 'to do battle with the serpent,' could not brook. He accordingly dismounted from his horse and advanced towards the snake, although he had not even 'a sling and a stone' in his hand, or, indeed, any weapon more formidable than a light umbrella. The snake seemed at first taken aback by his impudence, and turned to

give him a further examination before he proceeded to extremities, when he was further nonplussed by Mr. Lindley opening his umbrella and presenting it before him as a shield. The snake and the missionary then warily dodged at each other from side to side, until at last the snake lost its temper, and so gave an advantage to its cool adversary, who thereupon, seeing his opportunity, brought down a huge fragment of an ant-heap, lying at hand, from above the edge of the umbrella, upon the head of the serpent, and immediately after had his triumphant foot planted upon the neck of his prostrate and stunned antagonist; he must for the instant have presented a very significant 'living tableau,' considering what the profession of the reverend gentleman was on the one 'hand, and what the symbolical reputation on the other of the vanquished combatant.

The puff-adder—almost certainly the 'Cerastes caudalis' of the South African catalogues—is a very common snake in Natal, and one which has a very bad reputation, although of an altogether different cast to that of the sanguine and impulsive 'imamba.' He is slow and phlegmatic of temperament, and not given to be meddlesome otherwise than with his own particular small quarry when he is hungry. But he is brave and tenacious if himself attacked, and hangs on with determination to anything that he gets between his jaws. He is a thick, short, and vicious-looking serpent, with an abruptly truncated tail, and with a broad head set upon a comparatively narrow neck. He has a very energetic 'snap' in his jaws when he is well awake and angry, and has a venom of considerable power. There are, besides these prominent heroes of

the 'ophidian' world sundry smaller adders and vipers. of which some are known as the 'night-adder,' and the 'house-adder,' from their habit of occasionally making themselves comfortable in cold nights in boxes or beds; and there are also water-snakes, grass-snakes, and tree-snakes of very lithe and slender form. But the same remark applies to the whole of these, that they are only dangerous if accidentally trodden upon. They glide quietly out of the way when attention is drawn to them, and all of them are immediately disabled by a sharp blow from an elastic stick or thong across the neck or back.

The birds of Natal are very numerous, and many of them very beautiful. Mr. Layard's catalogue of South African birds at the Cape contains over 700 species, and very many of these extend to Natal, as in this great South African continent there is nothing but climate and feeding facilities to limit the distribution of species. The great South African vulture is the *Vultur auricularis*, and he is found everywhere where there is carrion to be consumed. He is a black and white bird, of gigantic size, with huge, fringed, flapping wings, and with enormous power of flight. He suddenly appears as a black speck out of the remote heights of the sky whenever his services as a scavenger are required. He dwells in rocky caverns, and is properly a mountain bird, but sweeps the plains in his extended feeding excursions, which are scarcely limited by miles. He may be constantly encountered busily at work in flocks, upon dead animals, in the higher plains. The large eagles of South Africa to be seen in Natal are the *Aquila bellicosa*, *Aquila rapax*, and *Aquila vulturina*. The *Aquila bellicosa* confines

its hunting to wooded districts, and will carry off small antelopes. The interesting 'secretary bird' (*Gypogeranus serpentarius*) is properly a falcon, although it looks like a crane. It stands like the crane on legs 2½ feet long, but it has the beak, short neck, and claws of the hawk. It is the 'slangen vreeter,' or 'serpent-eater' of the Dutch. Its designation of 'secretary' was given to it on account of the tuft of feathers which it carries at the back of its head. The distinguished French naturalist, Le Vaillant, speaks of having been familiar with this renowned serpent-destroyer in Natal. The bird advances to the attack of a venomous snake under the shelter of one of its wings, which it advances as a very efficient shield; it then strikes the serpent with its other wing, and tosses it about with the end of its wing-feathers until it sees a good opportunity to kill it, by suddenly seizing or striking the head with its beak. The falcons and hawks are of course a numerous tribe where their quarry is so abundant. Hawks so small that they prey only on insects are spoken of, but in all probability they belong to the so-called goat-sucker family (*caprimulgus*), which has a curious external resemblance to the true birds of prey, and, as they are night hunters for the most part, may be very easily mistaken in the dark for the birds which they so nearly resemble.

The crow family is well represented in Natal by a raven-like bird with a carunculated and hooked beak, and with a white crescent upon its back, which is seen pretty well everywhere. Among the cone-billed finches are some very interesting birds. One known as the Kafir-fink (apparently the *Vidua paradisea*,

Whidah finch, or widow bird) has in the pairing-season two remarkable long tail-feathers which flit out behind as a train as the bird flies. In the male at the pairing-season these feathers are about 12 inches long. A relation of this bird (the *Ploceus Capensis*) builds curious pendulous nests which hang down from trees with their entrance below. It is another member of this family (the *Ploceus*, or *Loxia*, *socia*, weaver-bird), described by Sir John Barrow as African, which constructs a compound sociable nest of grass, sometimes extending 10 feet across, and containing many hundred birds. A very elegant little finch-like bird with a bright crimson bill is a common ornament among the trees of the coast. The starling-like bird which perches on the backs of oxen and other grazing animals, to extract from their hides the larvæ of parasitic insects, is the *Buphaga Africana*.

Amongst the climbers of the coast bush there is one bird known as the emerald cuckoo, which is supreme for the splendour of its shining plumage of mingled emerald and gold. It is in all probability nearly allied, if not identical, with the golden cuckoo (*Calcites smaragdinius*) of the Cape. The honey-guide (*Indicator albirostris*)—which is said to conduct travellers to the nest of the bee with its cry of 'cheir, cheir,' and sometimes to introduce them to a leopard instead—is a near cousin to the emerald cuckoo. The slender-billed 'birds (*Tenuirostres*) are most beautifully represented by the honey-birds or sun-birds (*Cinnyridæ*), which are the African analogues of the humming-birds of the New World. They are exquisite little birds, not so large as some of the biggest insects, with long slender bills and brilliant plumage, which live upon the juices of flowers, and pump their

supply from them through their long bills while poised upon vibrating wings. The king-fishers and bee-eaters are considered by the naturalists Dumeril and Meyer to be intimately connected in natural alliance with the slender-billed sun-birds and humming-birds. There are some bright and gay-plumaged king-fishers in Natal. The Natal bee-eater is the *Leptosomus viridis*.

Of the poultry birds, partridges, pheasants, quails, and pigeons are all represented in Natal; but the bird that is known to the sportsman as the wild-turkey is properly a stilt-bird and not a gallinaceous fowl. It is really the wild bustard of South Africa (*Eupodotis cristata*). It is the wild paauw, or wild peacock, of the old colonists, and the *Otis kori* of Burchell, who described it as standing 5 feet high and measuring 7 feet between the tips of the expanded wings. It is a very large bird, with a thick mass of snow-white feathers, and is shot in abundance in and around Natal, the sportsman riding in circles round it until he gets within distance. The meat of the breast is brown, with a peculiar short fibre, while that of the limbs is white. The flavour of the bird is somewhere between that of pheasant and wild-duck, but at a respectful distance, as the flesh is coarse and dry. It is, nevertheless, in high esteem with sportsmen, and certainly makes a very distinguished appearance when several downy and snowy birds are hanging together at the back of an ox-waggon. A smaller species of the same genus, the koraan or knoraan of the Dutch settlers (*Eupodotis scolopacea*) is also shot in Natal by sportsmen, and regarded with much favour both in the light of sport and game.

The stilted birds or long-legged waders are in considerable force in Natal. The ostrich (*Struthio-*

camelus) is of course well known as the denizen of the high plains of the interior table-land to the north of Natal. It is only seen for the present in Natal when it makes a passage down to the seaport, as it occasionally does, with other travellers. But in all probability it will be a naturalized citizen and settler there before very long, as ostrich-farming is beginning to be looked upon as a promising branch of South African speculation and industry. Cranes, storks, and pelicans are of tolerable abundance, and in some variety in the colony. The small flamingo (*Phœnicopterus parvus*), with his pure rose-coloured plumage—a very beautiful bird, which certainly looks very little indeed like the duck or goose, with which he is associated by scientific naturalists—has been seen by sportsmen within the colony, and is not infrequent a little beyond its frontier.

An exact catalogue of Natal birds, which is a thing very much to be desired in the interests of science, is not yet available for naturalists. Such a catalogue would, however, most probably be found not to omit many of the notabilities of the Cape but to possess, in addition some very interesting species of forest-birds.

The rivers of Natal are not favourable to the support and multiplication of fish, on account of their bold and rapid current, and of their abrupt descent to the sea. Some of them are said to be entirely devoid of pisciform life; others, no doubt, have hitherto been imperfectly explored. Some which were before conceived to be tenantless, have been found to yield an occasional dish for the table, since the introduction of Indian coolies, who are skilful anglers. The inner bay is, however, an inexhaustible store of sea-fish, as it is replenished from the open sea at each turn of the tide, and this

store is now beginning to be drawn upon by systematic fishing, as some coolie experts have settled themselves upon its islands. The fish most commonly seen, however, by the Natal colonists is one known as the rock-cod (*Serranus Cuvierii*). It is a large fish of the perch family, in some measure allied to the *Serranus cabrilla* and the *Serranus gigas*, occasionally seen on the Cornish coast and abundant in the Mediterranean.

The following bare list of the edible fishes known in the neighbouring waters of the Cape of Good Hope may be taken as indicating what may yet be looked for in this fine fishing-ground at Natal, which has the very estimable advantage of being land-locked and therefore protected from rough weather, at the same time that it remains entirely open of access to the waters of the outer ocean.

List of the edible fishes of the Cape of Good Hope :—

1. Red gurnard—*Triglia Capensis.*
2. Grey gurnard—*Triglia Peronii.*
3. Jacob Evertsen—*Sebastes Capensis.*
4. Sancord—*Sebastes maculatus.*
5. Kabeljauw—*Sciæna hololepidota.*
6. Geelbek—*Ololithus æquidens.*
7. Baardmaunatjie—*Umbrina Capensis.*
8. Steenvisch—*Cheilodactylus fasciatus.*
9. Poompelmoesje—*Cheilodactylus brachydactulus.*
10. Hangeberger—*Sargus Hottentotus.*
11. Hottentot fish—*Sargus Capensis.*
12. Stompneus—*Chrysophrys globiceps.*
13. Roode steenbrasser—*Chrysophrys laticeps.*
14. Roman—*Chrysophrys Christiceps.*

15. Poescop—*Chrysopeus Gibbiceps.*
16. Dageraad—*Pagrus Laniarius.*
17. Blaauwe steenbrasser—*Lithognatus Capensis.*
18. Roode stompneus—*Pagellus Afer.*
19. Seventy-four—*Dentex rupestris.*
20. Silver-fish—*Dentex argyrozona.*
21. Windtoy—*Cantharus Blochii.*
22. Dasje—*Cantharus emarginatus.*
23. Bamboes Visch—*Boops salha.*
24. Bastard Jacob Eversten—*Pimelepterus fuscus.*
25. Galleon fish—*Dipterodon Capensis.*
26. Half-cord—*Scomber Capensis.*
27. Mackarel—*Scomber grex.*
28. Snoek—*Thyrsites Atun.*
29. Leervisch—*Lichia Amia.*
30. Elvtvisch—*Temnodon saltator.*
31. Maasbanker—*Caranx Lacep.*
32. Katunker—*Stromateus Capensis.*
33. Harder—*Mugil Capensis.*
34. Springer—*Mugil mutilineatus.*
35. Klipvisch—*Blennius versicolor.*
36. Bagger—*Bagrus Capensis.*
37. Shad—*Clupea ocellata.*
38. Anchovy—*Engraulis encrasicolus.*
39. Stokvisch hake—*Gadus merlucius*
40. King klip-fish—*Xiphiurus Capensis.*
41. Tong solé—*Solea vulgaris.*
42. Zand kruiper—*Rhinobatus annulatus.*
43. Spotted ray—*Raia maculata.*
44. Rock cod—*Serranus Cuvierii.*

Of this list of fishes, Jacob Evertsen, sancord, roman, poescop, dageraad, roodè stompneus, seventy-four,

windtoy, elvtvisch, klipvisch, kingklip fish, and rock-cod are held in very high estimation. The Jacob Evertsen receives its name from its strong physiognomical resemblance to an old drunken Dutch sea captain, who had a red face with very prominent eyes. The kabeljauw, geelbek, hangeberger, stompneus, roodesteenbrasser, blaauwe steenbrasser, silver-fish, bamboes visch, snoek and shad are all salted for exportation at the Cape.

The rocky sea coast of Natal is everywhere alive with crustaceans and molluscs. In many places the rocks extending round into the mouths of the rivers are covered with a large rock-oyster. The shallow cavities and basins of the rocks themselves teem, when the tide is out, with the most beautiful forms of mollusc life in miniature. In a small natural aquarium, constituted by a rock-enclosed pool of pellucid water a couple of yards across and a few inches deep, cypreæ, trochuses, cones, trumpet-shells, murices, turbos, naticas, volutes, delphinulas, terebræ, limpets, and barnacles may all be seen at once, making the most of the interval of still water, and carrying on in intimate companionship the various operations of mollusc existence. There are many varieties of land-shells in the interior—one of them a very large species of *Helix*, with a delicate white shell. The earthworms, as a matter of course, ply their craft of bringing up the earthy ingredients of the soil to the air, and of opening out its texture to disintegrating agencies, in all suitable ground; and the army of leeches lies in wait for both quadrupeds and bipeds in the still pools of the marshy land which here and there fringes the smaller watercourses.

The 'insect' department of wild animal life is in

overpowering force in Natal, and furnishes objects of exceeding interest, to say nothing of special observation and research, at every turn. Perhaps, the natural group which seizes most immediately upon the attention by its bold bearing and obtrusive behaviour, and by the large size, vigorous movements, and vitality of its members, is the orthopterous tribe, comprising the crickets, locusts, and mantids. The long-legged locusts, in brilliant liveries of scarlet and gold and green, leap boldly into the air when disturbed in their voracious feeding, and then expand their membranous wings and prolong their leap into a short flight of a few yards, which is marked simultaneously by the flashing of the bright colours in the sunshine and by the whirring sound of the wings. A locust hunt in the garden, conducted by cocks and hens, is a very exciting piece of sport. When an insect lights from its leap there is a sudden convergent rush of the observant and expectant birds upon the spot, and they generally arrive just in time to be present at a fresh start and to inspect the vacated place. The true locust (*Locusta viridissima*) is seen in Natal during the height of the warm season, and levies a considerable tax upon the green crops, but there is no instance on record of such devastating visitations of the insect as occasionally are experienced in the interior districts. The Zulu Kaffirs say that the locust was not known in Zulu-land until 1829, and that it was then sent back with a troop of Zulu invaders by a chief who had been attacked in one of their raids, charged to carry devastation and famine to the conquerors. The native tribes turn the insect to account whenever it appears in over-abundance. They sally forth in the cool of the evening, when it is half-

paralysed by cold, and sweep it up into baskets and skins, then steam it in close vessels over the fire, dry it in the sunshine, winnow away the legs and wings, and store the dried residue in their granaries. The dried locust is ground between stones and converted into a sort of paste or porridge with water when it is eaten. It is said that there are native sorcerers whose reputation for 'making locusts' is as great and as remunerative as it is for making rain. The carnivors of this family, the mantids, are very interesting insects. The large green mantis (*Mantis religiosa*), which is very common, is powerful alike upon leg or wing, although he does not leap like the big-thighed locust, but he is much given to fits of contemplative brown study and expectant repose. In this state he fixes himself upon some convenient blade or stalk, and throws up his thorax and shoulders into an erect position, at the same time pressing his fore-arms together before him and looking out over them with a fixed stare, but with his lips slightly vibrating the while. In this mood he will allow himself to be touched with the finger, and will only stagger back a pace or two and fix his goggle-eyes more intently. It is, however, in this state of apparent inactivity that he seizes his prey. If an unwary insect of suitable quality, deceived by his imperturbable stillness, come within reach it is immediately seized between the upraised fore-legs, and fixed between them by a row of spikelets, and after a leisurely inspection the mantis then proceeds to finish the operation with his formidable jaws. This mantis occasionally makes havoc with white muslin curtains, snipping large holes in them with his cutting maxillæ. The phasmids (*Phasma fragilis* and its congeners), which are an

aberrant group of mantids, are all exclusively vegetable-feeders, and protect themselves by assuming the appearance of sticks and twigs, and by occasionally putting on very grotesque forms that are seemingly adapted to scare as well as to deceive assailants. These stick-insects and spectre-insects are destitute of wings and entirely devoid of the prehensile powers of the mantis. They lead indolent lives, stretched out in the sunshine in the security of their masked and simulated character, with their legs extended in the same direction as their bodies to render their assumed *rôle* complete. When they shift their quarters they draw themselves lazily along the surface of the vegetable textures upon which they feed.

The beetles of Natal are numerous enough to furnish a rich harvest to the collector, but they do not thrust themselves so much into notice as the orthopterous insects. Burly big-horned *geotrupidæ* of stag-beetle character are occasionally met with, and heavy cock-chafers (*Melalonthæ*) plunge like conical shot from guns of heavy calibre through the air. Large *coprophagi* are very abundant and very industrious, rolling their dung-balls, twice as large as themselves, often pertinaciously up hill. There are commonly two of these 'coleopterous navvies' at work upon a ball, and they assist each other's efforts in the most amusing way, sometimes mounting the ball and treading it round backwards in 'Leotard' fashion. Some of the Natal beetles are beautifully coloured and marked. Red and black longicorns sail awkwardly through the sunshine with expanded wings and outstretched limbs, and golden cassidæ cluster about their favourite plants. In alluding to the beetles of Natal, in a very interest-

ing sketch which he published in one of the Natal periodicals in 1871, Mr. Roland Trimen, of the Cape, gives the following little picture, which is instinct with beetle life: 'Slow *Heteromera* of a grave and venerable aspect are also perambulating the path. They remind one of nothing so much as elderly gentlemen taking a "constitutional," for they seem to have no particular object in view, and stop occasionally in a vague manner as if for want of breath, or, perhaps, pondering whether they have walked far enough. The rugose *Rhyncophora* that toddle about are even slower, and seem the very tortoises of the insect world. A rapid *Anthia* or *Cicindela* now and then hurries past at a very different pace; they are evidently on business, and look as if they feared to be late for their train.'

The 'fire-fly' of Natal is of the beetle family. It is a small, dark, elateriform insect (probably allied to either *Pyrophorus* or *Cucoyos*), with weak and soft elytræ, and with but a dull and grovelling aspect when its lantern is out, or when it is examined in the superior brightness of daylight. But it is a very different matter when the insect is on the wing in its full splendour on a dark night. Occasionally its dancing fires can only be distinguished from the radiant stars by their unceasing movements. When the insect is at rest and at an appropriate distance, and when the night is absolutely dark but for starlight, it is sometimes not possible on the instant to discriminate between the terrestrial and the celestial spark. During two or three months the tall-grassed pastures around Pietermaritzburg are spangled all night long with the bright gleams of these fire-flies, and at the same period the open watercourses which still

run through some parts of the city are overhung with streams of their dancing lights. The light shines through the integument of the last two or three rings of the abdomen, and can be seen for a surprising distance. The larva of the beetle emits the light as well as the mature insect. There is also a small species of centipede which manifests a distinct luminosity. The light of a single fire-fly is enough to make the figures and hands of a watch distinctly visible. The luminosity continues for a brief interval after the insect has been immersed in spirits of wine.

The scale-winged insects, both butterfly and moth, are of great variety and marked beauty in Natal, and many of them are both curious and rare. Mr. Trimen describes a deep-red butterfly of the coast-bush, the *Acræa petrea*, which defends itself from attack by exhaling from the joints of its body a clear yellow secretion that has a very disagreeable odour, and that gives an enduring stain to the fingers. These butterflies float indolently and lazily about and bask in the warm sunshine with, apparently, the utmost security. The dragon-flies pass them by in disgust to seize less cunningly-protected victims. A large red-brown butterfly, the *Cyllo Leda*, which keeps well in the shadow of the deep woods, exactly resembles the hue of the dead leaves upon which it rests. A large white-marked *Hesperiida* ('skipper') in its bustling and fitful flight is continually lost for uncertain intervals to sight and then suddenly re-appears. He is practising his special art of defence, which consists in ducking under expanded leaves, and clinging to their under surfaces with still outstretched wings, and then starting afresh for another short spell—a habit that must prove more puzzling and baffling to

other pursuers than it does to the butterfly collector who has the help of observation and experience to enable him to circumvent such little artifices. Amongst the coast species of butterflies are abundantly found the white and yellow *Pieris agathina*, and also *Pieris severina* (first cousins of the familiar garden white butterfly of England), bright yellow Terias, a red-tipped *Anthocaris*, white and yellow *Callidryades*, *Eoniæ*, *Nymphalidæ*, *Philognomæ*, and *Eunica Natalensis*. *Danais chrysippus* and *Danais echeria*, with their triangular wings, are everywhere. Two large and highly ornamented *Nymphalidæ* of rapid and high flight—one of them the *Nymphalis Brutus*—*Eudicella Smithii*, *Amaurodes passerinii* and *Eurytela Hiarbas* were all found by Mr. Trimen clustering round a sugar-exuding acacia, with a huge mantis feasting away upon a stripped butterfly above, and with the legs and wings of all these species, the *rejectamenta* of earlier removes in the feast, scattered in great abundance beneath. There was, however, no trace of the *disjecta membra* of the *Acræa* amongst these spoils. In the height of the summer season many other very beautiful and entomologically interesting species of butterfly are added to the insect treasures and ornaments of the coast. *Papilio demoleus* and *Eronia cleodora* appear hovering about the flowers. One of the most splendid species is a snow-white butterfly (*Anthocaris Ionê*), with glittering violet and black wing tips. The black *Papilio nireus*, with its livery of blueish green stripes, the blue *Iolaus silas* with a single blood-red streak on the satiny-white field of the under surface of the wings, the *Loxura dermaptera*, the many spotted *Papilio Leonidas*, the long-tailed *Papilio Merope*, *Papilio Pylades*, *Papilio Cyrea*, *Diadema Bolina*, *Junonia Anacardii*, and, smallest and least conspicuous of the many

hued and variegated host, the *Acræa punctatissima*, are also met with from time to time. The twilight moths are, many of them, very highly coloured and decorated. Prominent amongst them as ornamented species are a brown and orange *Macroglossa trochilus*, the *Sesia Hylas*, the glittering *Glaucopis formosa*, and the *Egybotia Vaillantiana*, a green and purple moth barred with bright orange, which all fly in the day amongst the butterflies. In the late twilight of the midsummer evening a 'humming-bird hawkmoth' may be constantly seen in the gardens of Pietermaritzburg, hovering in front of the flowers of the oleander, with vibrating wings, and with its long trunk uncoiled and thrust out into the nectary of a flower, sucking in the honey as it hovers. This hawkmoth is quite as large as some of the sun-birds, and is so like them in its habits and aspect that it is sometimes difficult in the dim twilight to distinguish it from them. The first time the writer saw this hawk-moth, at work in his garden, he took it for a sun-bird, until it occurred to him that the hour was too late for the habits of the bird, and that therefore the hoverer must be some other kind of honey-feeder.

Amongst the butterflies most commonly met with in the inland and up-country districts occur first and foremost the ubiquitous *Danais chrysippus*, and, in scarcely less overwhelming force, the sober-tinted *Erebia sabacus*, *Papilio demoleus*, *Colias electra*, *Pieris hellica*, the red and black spotted *Acræa notiara*, *Acræa violarum*, the blue and red *Junonia Amestris*, a dull *Anchesia*, a large dark red *Octavia*, a gaily varied *Ceryne*, and the *Meneris Tulbaghia*.

The larvæ of the scale-winged insects present many features of considerable interest to the observer; but one of the most curious spectacles that is to be seen in

relation to them is the caterpillar procession of the immature or larva form of a species of moth (probably *Bombyx*), which has been so graphically described by Reaumur in one of his works. The writer was fortunate enough on one occasion to witness a procession of this character, which chanced to intercept his course as he was driving along the high coast-road between Durban and the Tongaat. He regrets to say that the wheels of his vehicle passed clean over the column, making many hecatombs before he was aware of its presence. Jumping down from the light waggon to render the most prompt and the best reparation that he could, he found a moving phalanx of caterpillars, four abreast, marching in close formation across the road. The road at this spot was about sixty yards wide, and bordered by the unbanked or unhedged forest on either side, the trees having been simply cut away to form the thoroughfare. The column of the caterpillars came out from amongst the trees of the undergrowth in one direction, and passed on into the concealment of the bush at the other side. The caterpillars in each rank were in close contiguity with each other, and in the successive ranks the head of one caterpillar touched by its mandibles the tail of the one that immediately preceded it in the array. When the wheels of the waggon went over the procession the head of the column continued its march, but the portions that were intercepted by the wheels *stopped*, the leading caterpillars in each section missing the guidance of the front ranks that had been before them. After a very brief interval of suspense, however, the broken ranks were closed up, and the column again made contiguous, and the march was steadily continued, leaving the dead upon the field. In a short time the rear ranks emerged from the cover and passed across

the road, and the entire procession then moved on out of sight into the depths of the bush. There were, apparently, four caterpillars abreast through the entire length of the column. Each caterpillar was about the size of an ordinary cedar pencil and two inches long, and was covered with closely set hairs arranged in tufts like the bristles of a bottle-brush.

The cicada takes the place and fulfils the office of the Italian organ-grinders in the streets of Pietermaritzburg, and it has the marked disadvantage and the additional drawback, when compared with those metropolitan street pests, that it plays only one tune, that it plays often all day, and that it 'vagrandizes' in companies instead of alone. It is properly a large, green, vegetable-feeding bug, which lives upon the sweet juices of trees by sucking them out through a slender proboscis or pipe, and which keeps up a continued reverberating screech while it is feeding, that comes remarkably near to the insufferable shrillness of the railway whistle. It is very fond of the sweet juices of the Australian willows, an ornamental yellow-flowered mimosa, which has become quite naturalised as a favourite garden-shrub in Natal, and it accordingly haunts them in most places where they are to be found. Mr. Trimen, who seems to have fallen in love with the music of this street-performer in a visit that he made to Natal, has given a very characteristic, true, and happy description of the leading circumstances of the case in a comparatively brief paragraph. He says: 'A tremendous chorus of cicadæ attracts you towards a neighbouring acacia. When you are close to the trunk the sharp ring of the insects' note makes you certain that these musicians are sitting just before your eyes, but, for the life of you, you

can't see them. At length, when your nose is all but touching the tree, *wuz-squeak-wuz*, a fellow takes the alarm and is off, just brushing your face. Another follows, and the concert stops in your immediate vicinity. A few minutes' patience, and they strike up again. You are getting to know the trunk now—you scan it narrowly—something moves; and lo! the whole choir is at last visible—half a dozen stout, bull-headed individuals sitting close together, with their abdominal plates vibrating most rapidly. You no longer marvel at the difficulty of discovering them, for their bodies are coloured with greenish and grey, so as closely to imitate the surface on which they sit; and their wholly transparent wings, which cover the abdomen, obscure any distinct outline of the insect.' This insect is one of the true 'chanteuses' family, the *Cicadæ manniferæ* of Linnæus. It is in some measure allied to the frog-hopper (*Cercopis spumaria*) of English gardens, the small green bug which in its early larva state incloses itself in a frothy liquid upon the leaves that it frequents, apparently to shield itself from the too-burning glare of the sun. In the musical cicada of Natal the wing-covers are veined, transparent membranes, forming an admirable veil for the obscuration of the form of the insect's body. The musical instrument of this sweet 'singer' is properly a kind of drum, which is vibrated by muscles instead of by drumsticks. There is a drum at each side of the abdomen, covered up by an outer plate of cartilage, and it essentially consists of a number of straight and parallel folds of a membrane, extending from a scaly ridge. The folded membrane is made to stretch and relax in rapid succession by the influence of muscular cords, and the sound-vibrations are set up in

the air by this pulsating play of the folded membrane. The male insect only, however, is furnished with a drum. The body of this musical cicada is about an inch and a-half long, or something more.

The dragon-flies and myrmeleons are very conspicuous amongst the insects of Natal, the former especially from the glistening brilliancy of their sheen and the flashing vigour of their flight. They are very voracious insects, and must be veritable 'dragons' to their prey. There is one very large and powerful monster amongst them, a species of *Œshna*, that is perfectly marvellous in the power and directness of his flight, as he hunts on the wing, after the fashion of the swallow, and that is scarcely less wonderful for the insatiable keenness of his appetite. The myrmeleons (*Palpares*), which are the perfect insects of the ant-lions, are also very voracious, but they are much less formidable on the wing. They flap wildly and irregularly about, instead of striking their quarry vigorously home. It is the larva of the myrmeleon which makes pit-falls for its prey, by burying itself in sand at the bottom of a funnel-shaped pit, with its jaws only protruded, ready to catch any unwary insect that may slide down the shelving and slippery sides of the cavity into its clutches.

Both bees and wasps form a large group amongst the insects of Natal. The social bees make their nests in hollow trees and in other convenient cavities where due shelter is afforded, and store up in their waxen cells a very fragrant honey. Solitary mason-bees tunnel out the plaster of houses, often in the interior of the rooms, and ply busily to and fro through open windows. Brown and gold wasps construct their paper nests under

the shelter of verandahs. One large species, of hornet-like form and aspect, makes elaborate nests of paper, which it hangs from verandahs by a short stem. In the early season of the spring the foundress of one of these nests may be seen visiting house after house, and deliberately selecting a suitable site for her operations. Having accomplished this preliminary, she next moulds a small dark-brown foot-stalk and attaches this firmly to some overhanging surface of rough plaster, or to the fibres of thatch, and then hangs, back downwards, to this foot-stalk and plasters on pellet after pellet of paper-like pulp, flattening out the pulp with her mandibles and working backwards all the while, until the foot-stalk grows into a pendulous pear-shaped mass as large as a hat. A single cell first appears at the end of the foot-stalk. Each successive layer is then carried to larger and yet wider dimensions, until the structure comprises several hundred six-sided prism-shaped chambers, arranged compactly in strata over each other. An egg is deposited in each of these chambers almost as soon as it is formed, and from these eggs emerge in due time a fresh band of helpers to push on the work of construction. The insect, having worked for a time, goes off to collect fresh stores for the elaboration of the pulp, which consists of vegetable fibre disintegrated and moistened and softened in its jaws. This hornet is capable of inflicting a very painful sting, but it is by no means so pugnacious as the common English wasp. If its work is broken away in the early stages of its construction it patiently resumes its labours by starting afresh; and it will repeat this process any number of times with the most praiseworthy perseverance. This ingenious and pertinacious paper-maker is a yellowish-

brown insect of sedate demeanour and flight, with a narrow-waisted body terminated by a long, pointed abdomen, unpleasantly suggestive of the terminal sting.

The ants of Natal are a yet more interesting division of the hymenopterous family. They are simply and literally a legion in number, and would furnish any competent entomologist with materials for a life-long study. Black, brown, red, or white, they are found everywhere. Some of the black ants are very fierce and in some measure formidable fellows, as they are provided with a sting, which they are always ready to wield.

The writer, upon the occasion of a visit to Nomansland in 1862, made a personal acquaintance with a colony of these unamiable and inhospitable aborigines of South Africa, which enables him to bear testimony in this particular. He had dismounted from his horse one bright sunny afternoon, and, having thrown his bridle over his horse's head, had seated himself upon the bole of a prostrate tree, and was looking out in calm contemplation over a very beautiful stretch of landscape with the sea-surf breaking over the bar of one of the lagune-mouthed rivers in the distance, when he became conscious of a smarting sensation that seemed very much like that of a blister just beginning to draw. On rising, a little puzzled, from his seat, he found that the entire trunk of the tree was alive with an agitated mass of little black ruffians, who were rushing to and fro, brandishing their antennæ and snapping their mandibles in a state of the most furious excitement. The tree which had been chosen for the writer's seat was, unfortunately, the nest of a very populous and thriving

community of these black ants, who had posted sentinels, in all probability, but had very unfairly neglected also to post notices to the effect that 'all trespassers were vesicated.' It was some hours before the last individual of the sortie-party of this stinging horde emerged, still bristling with warlike ardour, from one of the pockets of the unfortunate and incautious victim's riding-dress.

There is a much smaller ant in Natal, who manages to make himself a more familiar reputation amongst settlers. If he has not yet been named by entomologists he deserves to be handed down to posterity as the *Formica depredator*, for his powers of spoliation where the larder is concerned, or where there is anything sweet or fat to be carried off, are simply 'tremendous.' He makes his nest, whenever he can, in close communication with the walls of warm kitchens where there is a *soupçon* of cooking going on, and he then contrives private channels of access to the larder, which is the main object of his interest and attention; but he has also an organised system of espionage carried on over the whole house. Upon one occasion the writer had had a new dressing-table of yellow wood placed in a sleeping apartment in his house at Pietermaritzburg, which had not been previously infested in any troublesome degree by this ant. But the cabinet-maker, with due consideration for the appearance of his work, had oiled the surface of the wood thoroughly to bring out the grain. The result was, that on the following morning the table was found to be red instead of white, or very nearly so; it was densely covered by an almost continuous layer of these small red ants. with streams of them, comprising incalculable thousands, passing up and down the legs,

and all engaged in carrying away small oil globules from the wood. Some of the scouts of the nests of the household had discovered the oil over-night, and had given notice at the head-quarters of the secret-service department, and this organised night-visit of the army of spoilers was the result. This larder-ant of Natal is of very small and, individually, inconspicuous stature. But he quite makes up by numbers for any deficiency in the matter of size. He is a little red fellow, endowed with all but incredible powers of restless activity and subtle contrivance. Wherever toothsome morsels are left he immediately appears in altogether overwhelming clouds. He gets into the tempting, and most convenient, chasms of fermented bread; he overruns the meat; he thickens the milk, and speckles the butter; and he is very apt in an incautious household to be consumed in vast hecatombs at each mouthful of the dinner. If a dead individual is cast upon the floor he is immediately covered with a cluster of the survivors of his own family, as the body of a dead ox on the Veldt is covered with vultures. There is only one principle of defensive warfare which is available against the attacks of this depredator. No single morsel of sweet or fat food must be left anywhere where it can catch the notice of the scouts and bring down upon it the stream of organised invasion. The writer effectually carried out this method of defence by having shelves in the larder with false feet, which were inserted into little tin buckets of Stockholm tar. This was entirely effective, because it summarily cut off all possibility of establishing trails of communication with the head quarters of the community. It was of no use for the scout to practise an expedient, which is not

uncommon with him, of throwing himself down from a shelf or ceiling above, because he could not get up again by the same route, and his retreat in the other direction was effectively cut off by the impassable pool of viscid tar. Water will temporarily serve the same purpose as the tar, but it has the disadvantage of evaporating and requiring constant attention in the way of renewal, and it is also more apt to be bridged over by a 'forlorn hope,' told off to establish a communication by throwing itself into the ditch.

There is a species of black ant, which makes its nest upon trees in the shape of a ball of cement, plastered round some convenient branch. This species belongs to one of the fierce and aggressive tribes of formical life, which wages incessant warfare with the white ants, or *Termites*. If a branchlet supporting one of the nests of this ant is cut from the tree and stuck in thatch which has been invaded by the larger kind of *Termes*, a thatch-depredator in its habit, the result is that the thatch is very soon effectually cleared of the white ants. The writer knew of one case in which this plan was actually adopted with marked success.

There is a large black ant which is also a straw-depredator as well as the *Termes*, but which, unlike the shy and secret white ant, conducts his operations in the open daylight. He is a powerful and active fellow, with Herculean habits of life, and he may continually be encountered in the upland districts running along with pieces of straw measuring three and four inches, held bolt upright, like spears, and balanced with admirable precision. The opening of his nest is

a small hole cut out in the ground, and he may occasionally be seen considerably perplexed in getting his long straw into the small hole, on account of a second ant having been influenced at the wrong moment by an irresistible desire to help him, and having unfortunately seized in the attempt to do so the opposite end of the straw. As each of the operators wants to get his own end into the hole there is a practical difficulty about the matter, which is only finally settled by some accidental circumstance favouring the strenuous efforts of one, when the successful carrier disappears, with his own end, into the hole, and the long straw shaft first tilts up at the opposite end, and then, after a wriggle or two, plunges down out of sight. The foiled carrier, who still remains above ground, then stands for a brief interval, waving his antennæ, and looking down into the hole with an air that has very much the appearance of pretending that he had contributed materially to the successful issue of the operation.

Whenever the ground is illuminated by blazing sunshine, ants, black, brown, or red, may be seen hurrying along in interminable files in all directions. The hotter the sun blazes the faster they run. But when the sunshine declines these sensitive little insects move with considerably less activity and speed. In dull days of the cold season a few stragglers only may be observed creeping slowly and listlessly along, and, apparently, with no particular business on hand. The movements of the ants may almost be taken as thermometric indications of the vigour of the sunshine. It has often occurred to the writer, on looking at some small hole on the general level of the ground, possibly a quarter of an inch or so across, teeming with a dense multi-

which yields the 'Kaffir corn,' from which the native beer is brewed. There is also a large holcus (the *Holcus saccharatum*) known among the natives as Imfee, which looks very much like a small sugar cane, and which is cultivated by the Kaffirs for the sweetness of its juice.

The timber-yielding plants of Natal are of great interest, and of considerable value. The timber trees are found in two distinct localities: the thick bush of the coast, from which many of the harder woods of small size are derived, and the forests of the mountain-tops, where the trees are densely packed into the kloofs and ravines of the hill sides at a high elevation, and where some of them attain to considerable size. The slopes of the Karkloof range in the central highlands of the colony, and the ravines of the Tugela and Umkomanzi rivers, are occupied by forests of this character.

One of the best known, and upon the whole most generally useful, of the Natal woods, and which, therefore, may be spoken of first, is the yellow-wood of the colony (*Geel Hout; Uam Roba*). This wood is the timber of a species of yew (*Taxus* or *Podocarpus elongata*), having a leaf somewhat resembling that of the English yew, but longer. The wood is of a light yellow colour, of a very close and compact appearance, and works easily and well while it is still moist; but when dry it cuts jaggedly and unevenly across the grain. It is of short fibre and slight tenacity, and if painted or varnished, with the sap still in it, very soon decays. It shrinks more than any other wood employed for constructive purposes: beams of it shorten as much as half-an-inch in twenty feet. It is very

generally used for building purposes, where it can be efficiently protected from wet, and all the commoner kinds of household furniture, such as tables, and the internal fittings of houses, are made of it. It is in this sense the 'deal-wood' of Natal. It is entirely useless for out-of-door work, where there is exposure to weather. A cubic foot of the dry wood weighs 40 lbs. The tree grows with a long bare stem, and a tuft of contorted branches above. Where these branches are given off from the top of the stem the wood is so knotted and twisted that it acquires a very ornamental grain, well suited for the choice kinds of cabinet-work. The tree frequently attains a very large size. Clean poles, forty feet long, and five feet in diameter, are not unfrequently cut without a single branch. The yellow-wood is, on the whole, the largest tree in the Natal forests. It is essentially a hill forest-tree, and is found in wild mountainous places pretty well throughout South Africa.

There is another kind of yellow-wood, which is considerably less abundant, and which is known under the general name 'bastard yellow-wood.' It is the timber of another species of *Podocarpus*, and therefore also a yew-wood. The tree which yields it has smaller leaves, borne chiefly in terminal tufts at the ends of the branches, the naked stem being shaggy with an investment of hoary lichen. The wood is considered stronger than true yellow-wood when thoroughly dried. It is probable that the tree is identical with the *Podocarpus Thunbergia*, which is well known in the Cape Colony as a timber tree.

The sneeze-wood of Natal (*Nies Hout; Umtata*) is a less abundant, but a very much more valuable and

costly timber than the yellow-wood. It is the production of a tree (*Ptæroxylon utile*) belonging to the Horse Chestnut tribe (*Sapindaceæ*). The wood has received its common Dutch name in consequence of giving off an irritating dust when it is worked which makes the workman sneeze. This is due to the pores of the wood being saturated with a kind of gum-resin resembling guiacum. The resin is in such abundance that the wood burns like a candle with a bright flame. This, however, makes the wood troublesome to cabinet-makers, which is somewhat unfortunate as it possesses a very beautiful grain resembling satin-wood. Joints formed with it will not hold with glue unless they have been very carefully chalked before the glue is attached; and planks often fall into little holes after planing in consequence of the escape of the resin from the containing cavities. The wood is, however, all the more fitted on this account for out-of-door work. It bears wetting with impunity, and is almost proof against decay. There are instances in which posts of sneeze-wood have been taken out of the ground perfectly sound, after at least sixty years' service. The wood, also for the same reason, is comparatively safe from insect attack. The white ants will not have anything to do with it. The timber is straight in the grain, and splits readily, and is therefore well suited for making laths; but it has at the same time a tenacious fibre, and is considerably stronger than yellow-wood. The trees grow to a very large size. Trunks are not uncommonly cut down that are 80 feet long and 4 feet in diameter. But oddly enough the largest and oldest trees are frequently unsound at the heart. A cubic foot of the wood weighs

68 lbs.; that is to say the wood is three-fourths as dense again as yellow-wood. Large trees in the forest catch light very readily from the grass-fires that so frequently occur, and when once involved in the fire will continue to blaze for two and even three weeks at a time before they are burnt up. The wood is in the highest possible estimation for beams, lintels, door and window sills, railway sleepers, fencing, and all purposes of that kind.

A wood known as 'stink-wood,' stands close by the side of sneeze-wood in the matter of usefulness and value, and is very far before it in its capabilities for cabinet-work. It is a dark compact wood closely resembling the best walnut, with a longer fibre than sneeze-wood, and with greater tenacity. It is often variegated with mottlings of a different shade, and the choicest specimens of it have sometimes almost the beauty of tortoise-shell. It takes an excellent polish, and is altogether unexceptionable for the construction of such articles of furniture as are ordinarily made of mahogany, being tougher than sneeze-wood, and yet more easily worked. It is durable for indoor use, but does not stand exposure to weather by any means so well as the sneeze-wood. Even the ornamental workings of its grain are evanescent unless the surface is protected by a resinous polish. The tree is a species of laurel (the *Laurus bullata*), and grows in the highlands at the very top of ravines and kloofs where it is difficult to get at. In favourable positions it attains to a very large size. Fine specimens of the wood are supplied to the market of Pietermaritzburg from the saw-mills established beneath the slopes of the Karkloof range. The wood receives its familiar name from a peculiar

odour which it emits when under saw and plane. It is largely employed in waggon-building, and for making the rims of wheels and the stocks of guns, and it is admirably suited for all carving purposes, being almost as good as oak for church-fittings. A cubic foot of old dry wood weighs 53 lbs.; it is therefore intermediate in density between sneeze-wood and yellow-wood. Stink-wood and sneeze-wood are sometimes very effectually associated together in ornamental panelling. Yellow-wood, stink-wood, and sneeze-wood are the three kinds of timber which are the most largely consumed in the colony. The price of yellow-wood planking in the markets of Pietermaritzburg is about £8 per waggon-load of 800 superficial feet; the price of stink-wood and sneeze-wood planking is £17 10*s.* per 600 superficial feet.

There is a wood which is used in the colony principally for the manufacture of yokes for oxen, which is known under the name of Camdeboo stink-wood. It is of a lighter colour, and is of a woolly and porous texture, presenting a surface somewhat resembling the nap of cloth when cut with the saw. This wood is the timber of the *Celtis rhamnifolius*, a tree belonging to the elm family (*Ulmaceæ*).

The black iron-wood of Natal (*Tambooti*) is a very beautiful and valuable wood, but it can only be procured in logs up to 18 inches square, and from 20 to 25 feet long. It is the produce of an olive (*Olea latifolia*); and therefore belongs to the same natural family as the English ash and lilac. It has a close fine grain like the pear-tree, and is very heavy and compact; a cubic foot of the dry wood weighs 64 lbs. It is nearly as dense as sneeze-wood, but of far greater

strength because this high density is made of true woody fibre, instead of by the infiltration of resin into its pores. This fibre is arranged in knotty and curly bundles, which are so close that they can scarcely be discerned by the eye. The wood is in great request for the construction of cogged wheels, and also for the axles and spokes of waggon-wheels. It is most excellent for all turner's purposes, and is used in the old Cape Colony for railway sleepers.

There is also a white iron-wood found on the coast, known under the Kaffir name 'Umzimbiti,' which very closely resembles the black iron-wood in all essential particulars, and which is therefore put to exactly the same purposes. Axles made of it will stand constant wear in waggon-wheels employed for heavy transport for ten or a dozen years. This white iron-wood is produced by a tree belonging to the family of Xanthoxylaceæ (*Vepris lanceolata*), which is allied to the Rues, but which has no representative in the flora of England. The two iron-woods are perhaps the toughest and strongest of all the woods of the colony, and they are both exceedingly durable. The Kaffirs make tall knobbed walking-staffs, often twelve and fourteen feet long, and perfectly straight from end to end, of the Umzimbiti.

The Natal lancewood, or assegai-wood (*Umhlebe*) is produced by the *Curtisia faginea*, a member of the cornel family. It is very compact, hard, tough, and *elastic*, a cubic foot of it weighing 56 lbs. It gets its ordinary name from being the wood employed by the Kaffirs for the handles of their assegais, or spears. It is suitable for the turner's work, and is used by the colonists, on account of its great elasticity, for the con-

struction of wheel-spokes, carriage-shafts, and waggon-rails. It has a light red colour, and a grain closely resembling that of lancewood.

The white pear-tree of Natal is produced by the *Pterocelastrus rostratus*, a plant belonging to the Spindle-tree family (*Celastraceæ*). It is a strong wood with a fibre even straighter than that of stink-wood, and is an excellent material for the rims of wheels. The so-called 'red-pear,' of somewhat similar quality, is the timber of the *Phoberos Ecklonii*, which belongs to the Bixad family (*Flacourtiaceæ*), a tribe that has no representative amongst the European trees. The Flat-crown wood of the coast, which is used for the naves of wheels and for machine work, is very much like elm in the grain, cuts with a firm even fibre, and is of a brighter yellow hue than even yellow-wood. The tree grows with a clean cylindrical stem, fifteen feet high and two feet in diameter.

The white milk-wood (*Melkhout; Sideroxylon inerme*) and red milk-wood (*Melkhout; Mimasops obovata*), are capable of being put to the same uses as stink-wood, and are commonly so substituted where they are at hand. They make excellent axles for heavy waggons. They both belong to the natural family of the *Sapotaceæ*, which has no English representatives; but the *Sideroxylon* has been classed by some botanists with the cornels. There is also a very compact hard and durable red wood procured from the coast bush, which is known as red milk-wood.

The South African ash (*Essenhout; Umryamati*) is produced by the *Eckebergia capensis*—a meliaceous plant. It is a tough wood very much resembling elm, and is well adapted for the planking of floors. A cubic

foot weighs 47 lbs., and it is therefore much denser than yellow-wood.

The saffraan wood (*Saffraan hout*) is a kind of spindle-tree (*Elæodendron croceum*) *Celastraceæ*. It has strong tough timber and bark available for tanning. The South African ebony (*Itoomganzi*) is produced by the *Euclea pseudebœnus* which is a member of the Ebony family (*Ebenaceæ*). The wild olive is a very dense wood, the cubic foot of it weighing 60 lbs. It is only to be had of small size and is only of use for fancy and ornamental turning.

The South African elder (white els; *Platylophus Crifoliatus—Cunoniaceæ*); the red elder (red els; *Cunonia capensis*); the wild chestnut (*Calodendron capense—Rutaceæ*); the doorn-boom (*Acacia horrida*); and the red mangrove (*Combretaceæ*) yield inferior kinds of wood which are employed for posts, paling, and fencing. The red els is sometimes turned to account in waggon-building. The wood is like that of the red birch. The doorn-boom also yields gum, and bark for tanning. The wood of the Kaffir boom (*Umsinsi; Erythrina Caffra*) is very soft, light and porous, splits easily, and is used in some parts of the Cape Colony in the form of shingles for roofing. The thorn-trees and the wild willow (wilge-boom) *Salix gariepina* which grows by the sides of water-courses, are used for fuel and for the production of charcoal.

Very few of the wild native plants bear edible fruit of any value. The most notable case in which a good edible fruit is found, that of the amatungulu, has been alluded to. A handsome evergreen shrub belonging to the Bixad family (*Aberia Caffra*), which makes a splendid thickset hedge like the yew, with

the additional advantage that it is armed with sharp spines, bears a fruit like a small yellowish apple, which forms an excellent substitute for currant jelly when preserved, on account of its pleasant sharpness. It is so acid, indeed, that the Dutch settlers sometimes make pickles of it without vinegar. A small quantity of the preserved fruit serves to impart the flavour of apple-pie to pumpkin. This fruit is familiarly known as the kei apple, or in some places as Dingaan's apricot. The well-known Cape gooseberry is abundant in Natal, the plant growing wild as a weed; but it is most probably naturalised from some early introduction. The plant which yields the yellow berry is a species of winter cherry (*Physalis pubescens*), curiously enough belonging to the eminently poisonous natural tribe (*Solanaceæ*) which contains the deadly nightshades. It has a rank acid flavour, but is much esteemed nevertheless when preserved. There are several other fruits, produced by plants of this poisonous family, in other parts of the world, which are harmless and edible in the same way. Tomatoes, egg-apples, Quito oranges, and the Kangaroo apple of Tasmania are all solanaceous fruits. It will also be remembered that cayenne pepper is the powdered membrane of capsicum, a fruit of this tribe; and that the potatoe is the rhizome, or underground stem, of the *Solanum tuberosum*. The Kaffir orange is the fruit of a species of strychnos. It becomes yellow when ripe, and is eaten greedily by the baboons. It is also said that elephants are very fond of it, and take no harm from eating it in large quantity, because they reject the stones or seeds which contain the strychnia unbroken. The Kaffir-fig is the fruit of *Urostigma*

Natalensis. There is a native raspberry, obviously the fruit of a species of *rubus*, which attains a considerable size, and which has only a poor flavour.

The tall trees in the moist woods are often netted round with the clinging rhizomes of a fern (*Lomariopsis Meyeriana*), the fronds of which, shaped like immense ostrich feathers, hang round from the ground upwards, until the stems are lost to sight in the intricate mass of foliage. Fronds of the *Phymatodes irioides*, formed like swords three and four feet long, flash out from the branches over head in other places. The lance fern (*Lonchitis glabra*, or *Natalensis*), which is frequently encountered in such woods, is one of the most beautiful of the fern family. Fronds of the delicate *Gleichema polypodioides* not unfrequently measure fourteen feet in length, although the thickest part of the stem from which they come does not exceed the size of a crow quill.

As a natural result of the warmth and moisture of the climate, and the frequent occurrence of rocky ravines, the ferns of Natal are very varied and abundant. An admirably complete list and description of those at the present time known was printed in the 'Natal Yearly Register' for 1870, by Mr. Mark J. McKen, an enthusiastic naturalist, who was for many years curator of the botanical and horticultural gardens at the sea-port. The ferns named in this list were all collected in the several localities named in Mr. McKen's catalogue, either by himself or by some one of four other gentlemen, namely, Mr. John Sanderson, Dr. Cattell, the Rev. John Buchanan, and Mr. W. T. Gerrard, all skilful and experienced botanists. The ferns included in this list are:—

1. Gleichenia polypodioides
2. „ umbraculifera
3. Cyathea Dregei
4. Hemitelia Capensis
5. Woodsia mollis
6. „ Burgessiana
7. Hymenophyllum rarum
8. „ Tunbridgense
9. Trichomanes pusillum
10. „ filicula
11. „ pyxidiferum
12. „ rigidum
13. Davallia elegans
14. „ nitidula
15. „ Speluncæ
16. „ concinna
17. Crystopterus fragilis
18. Lindsaya lanceolata
19. Adiantum Capillus-Veneris
20. „ Æthiopicum
21. Lonchitis pubescens
22. Hypolepis anthriscifolia
23. „ Bergiana
24. Cheilanthes hirta
25. „ multifida
26. Pellæa geraniifolia
27. „ dura
28. „ consobrina
29. „ viridis
30. „ Calomelanos
31. „ Burkeana
32. Pteris longifolia
33. „ cretica
34. „ serrulata
35. „ quadriaurita
36. „ flabellata
37. „ aquilina
38. „ incisa
39. Lomaria attenuata
40. „ punctulata
41. Lomaria procera
42. „ Borgana
43. Blechnum Australe
44. Asplenium Kraussii
45. „ Sandersoni
46. „ trichomanes
47. „ monanthemum
48. „ ebeneum
49. „ erectum
50. „ Prionitis
51. „ anisophyllum
52. „ gemmiferum
53. „ serra
54. „ protensum
55. „ Adiantum Nigrum
56. „ solidum
57. „ cuneatum
58. „ furcatum
59. „ laserpitiifolium
60. „ varians
61. „ rhizophyllum
62. „ brachypteron
63. „ Dregeanum
64. „ flaccidum
65. „ rutæfolium
66. „ Thunbergii
67. „ Felix-fœmina
68. „ aspidioides
69. Didymochlæna lunulata
70. Aspidium aculeatum
71. „ pungens
72. „ Capense
73. „ frondosum
74. „ aristatum
75. „ falcatum
76. Nephrodium Bergianum
77. „ Thelypteris
78. „ Athamanticum
79. „ inæquale
80. „ calopteron

81. Nephrodium unitum
82. „ molle
83. Nephrolepis exaltata
84. Oleandra articulata
85. Polypodium proliferum
86. „ unitum
87. „ vulgare
88. „ ensiforme
89. „ incanum
90. „ Africanum
91. „ Schraderi
92. „ lineare
93. „ lanceolatum
94. „ lycopodioides
95. „ Mackenii
96. „ normale
97. „ irioides
98. „ phymatodes
99. Nothochlæna inæqualis
100. „ Eckloniana
101. „ Buchanani
102. Gymnogramme Totta
103. „ cordata
104. „ rosea
105. „ lanceolata
106. Vittaria lineata
107. Acrostichum hybridum
108. „ Aubertii
109. „ viscosum
110. „ spathulatum
111. „ tenuifolium
112 „ aureum
113. Osmunda regalis
114. Todea barbara
115. Schizea tenella
116. Anæmia Dregeana
117. Mohria Caffrorum
118. Marattia fraxinea
119. Ophioglossum reticulatum
120. „ vulgatum

It thus appears that there is, in Natal, almost an inexhaustible treasury of vegetable productions. The thickets of the coast present tangled masses of flower-bearing trees and shrubs intermeshed with climbers and twiners, and ornamented with parasites, the green hills and pastures are carpeted with flower-yielding bulbs, the mountain kloofs and rocky ravines are filled with evergreen trees. In a paper which was printed in Pietermaritzburg, in the year 1854, by the Rev. Edward Armitage, and which gives a sketch of the leading characteristics of 'The Botany of Natal' that is exceedingly well worth reading even at the present time, attention is drawn to the surpassing richness and abundance of the flora of South Africa. Mr. Armitage points to the fact that while the number of species of the vegetable kingdom indigenous to Europe scarcely

exceeds 5,000, the number of species in the Cape Colony, including Natal, almost certainly exceeds 14,000. It has been estimated that there are as many distinct species of plants upon the Table Mountain at Cape Town as there are in the United Kingdom of Great Britain; and Mr. Armitage draws attention especially to the further remarkable circumstance that of this enormous gathering of South African plants scarcely one hundred appear also in other parts of the world, and scarcely a dozen are seen also as native productions in the British Isles. The South African flora is, in this sense, an exclusive and a peculiar one. It is further remarkable, in regard to Natal, that, in consequence of the great difference of its climate, and of its geographical conditions and circumstances, as compared with those of the Cape, the Natal flora is also again in a large measure distinct from the flora of the Cape. Families that are especial characteristics, and that are rich in genera and species at the Cape, either are altogether unrepresented, or are very poor in individual species, in Natal. Or, on the other hand, families that are almost unknown at the Cape swell out in Natal into large and important groups. It is also well worthy of remark that although Natal is still some hundreds of miles outside of the Southern tropic, it nevertheless contains a considerable number of vegetable forms that are really and essentially tropical in their nature.

It has been remarked by skilful horticulturists in Natal that it is more difficult to take advantage of the inherent floral wealth of the colony for the formation of gardens than might be conceived under the circumstance of the moist and warm climate, and the

marvellous luxuriance of wild vegetable growth. One reason of this difficulty is that the large roots of flower-bearing indigenous plants stand breaking and cutting very badly, and that seeds are so commonly and so largely destroyed by insect depredations, or, when not destroyed, require the natural conditions of their wild life—such, for instance, as the shade and protection of luxuriant grass—for the establishment of their germination. It has been found that the readiest way to have a garden plot gay with a variety of native wild-flowers is simply to pare off the turf from a bank, and then watching the flowers as they spring up out of the ground, from the large herbaceous roots already existing there, to destroy all the least handsome and least desirable sorts, whilst the better kinds are fostered and preserved. By this ingenious and easy expedient it is possible to have lovely extemporised flower-beds, in which many of the flowers may prove to be quite new.

CHAPTER VI.

EARLY HISTORY

In the year 1497, Emanuel, King of Portugal, at that time a distinguished patron of maritime enterprise, sent one of his most renowned navigators, Vasco de Gama, with a squadron of three small vessels, to endeavour to make his way to India round the Stormy Cape ('*Cabo Tormentoso*'), which had been discovered and examined by his countryman, Bartholomew Diaz, ten years before. The adventurous squadron under the command of the Portuguese seaman happily accomplished its task, rounded the southern promontory of Africa on November 19, and then continued its course towards the north-east, touching first at a small settlement on the African coast, and finally casting anchor before the Moorish port of Calicut, on the western shore of the Deccan of Hindostan, on May 20, 1498. This voyage of the old Portuguese navigator is of memorable interest on account of its being the first European visit made to India by the long sea-route round the Cape of Good Hope; but it is also memorable on account of a minor incident of the passage As the squadron passed up from the Cape along the eastern coast of the African continent it came at length in sight of a bold headland, with an inlet of sheltered water behind, and with a connected stretch

of richly luxuriant land backed by verdant hills. This headland and natural harbour were first seen on December 25, and the part of the coast containing them was consequently appropriately named by the Portuguese commander, in memory of this circumstance, 'Terra Natalis,' or the 'Land of the Nativity.' The name so well chosen by the Portuguese discoverers has adhered tenaciously to the soil, and the 'Terra Natalis' of Vasco de Gama is at this time 'The British Colony of Natal.'

During the two centuries which followed this first voyage to India by the Cape, the 'Terra Natalis' was occasionally visited by passing seamen, but no particular mention was made of it until the year 1683, when an English ship was wrecked in Delagoa Bay, and its crew of eighty men made their way back to the Cape of Good Hope, along the coast, and took with them an interesting description of the region they had traversed, comprising the whole track that is now known as the Coast of Natal. Three years later Natal was again brought into prominent notice by an accidental circumstance. A Dutch ship, the 'Stavenisse,' was stranded in what is now the anchorage and bay of the Seaport of Durban, and the shipwrecked crew spent twelve months at the very spot where the port is now placed. They employed their time in building a small vessel out of the fragments of the wreck, and in this vessel they made their way to Table Bay, but left at the spot of their shipwreck, when they sailed, five of their companions, of whom four were Englishmen, and one was a Frenchman. Three of this party were ultimately taken away by a Dutch vessel visiting the coast; and they gave such a captivating description

of the place where they had sojourned so long that the Dutch captain afterwards returned, and purchased from a native chief for a Dutch Company at the Cape, some land on the spot. This land was subsequently claimed on behalf of the purchaser, but not until the chief who had made the bargain was dead, and his successor then refused to ratify the sale. He answered, 'My father is dead; his skins are burned with him in his house, which has been burned over him; and the place is fenced in, over which none now must pass; and as to what he agreed, it was for himself; I have nothing to say to it.' As a secondary result of this incident, however, a Dutch factory was established at the Bay in 1721. But the establishment was given up again shortly afterwards.

Nothing more of any material consequence was heard of Natal for something beyond another century. The next historical personage who appeared on the scene was a young British officer who had served in the Royal Marines. This officer, Lieutenant Farewell, had been engaged in exploring the coast towards St. Lucia Bay, and, while so engaged, in the year 1823, landed at Natal, and was so pleased with the place that when he returned to Cape Town he gave a very glowing description of it, and induced some twenty individuals to join him in an attempt to establish a trading settlement on the shores of the Natal harbour. He failed in an endeavour to get the Colonial Government to give their sanction to his proceedings, but he nevertheless persevered in his plan, and, as a first step, a gentleman who was afterwards a resident magistrate under the British Government in Natal, namely, Mr. Henry Fynn, was sent out to negotiate for a site with the Zulu chief,

Chaka, who at the time exercised paramount dominion over the territory. Mr. Fynn made his journey to Natal overland, and erected huts for the accommodation of his associates on the exact spot which is now the market square of Durban. He was there joined shortly afterwards by Lieutenant Farewell and his companions, who had chartered a small vessel, the 'Julia,' and so arrived by sea. Mr. Fynn in the meantime had made an unsuccessful attempt to procure an interview with Chaka, but had received a present from him, and an implied permission for the party to remain for the present at the Bay.

When Mr. Fynn first reached the neighbourhood of the Bay, where his party was afterwards established, he found that it was virtually an unpeopled and desolate wilderness. Not a single native hut, or village, could be discovered any where. There were no cattle or gardens; no growing crops. Occasionally a few half-starved and terrified stragglers were stumbled upon, who were dragging out a precarious and miserable existence upon wild roots and shell-fish. It was the rarest thing to meet more than two natives together. In hill regions somewhat removed from the coast, and in the hidden recesses of the bush, some small remnants of impoverished and broken tribes still managed to hold together in concealment, and to maintain a wretched existence, moving about stealthily from place to place, and not unfrequently dying of actual starvation. It is no inapt illustration of the state in which the aboriginal inhabitants were existing at this time, that some of these wretched wanderers had actually become cannibals. There was an old Kaffir quite recently living in Natal who used to tell that while serving as a

young man in one of Chaka's regiments he came suddenly upon a small party of the Amakangao tribe, which originally dwelt near to where Pinetown now stands, and found them cooking in pots over a fire what proved on examination to be human flesh. Another native relates that he was seized when a boy by one of these parties of stealthy wanderers within a few miles of the place where Pietermaritzburg has been built, and was made to carry a pot which he was told was to cover the vessel in which he was himself to be cooked for his captors' dinner. He escaped from his impending fate only by jumping suddenly into the Umsundusi river, amidst a herd of sea cows, and being a good swimmer, managed to elude the spears of his pursuers. The Kaffirs at this time commonly ate their own dogs; and it is said that the hyenas had become so daring and fierce by feeding upon human flesh that they carried away children, and occasionally even attacked full-grown women and men.

Yet, a short dozen years before the arrival of the English party from the Cape, this very spot had been densely peopled by a vast number of independent tribes, all living peacefully and prosperously under independent chiefs, who ruled them with a mild and patriarchal sway These tribes, indeed, were so populous and so closely placed, that it was almost impossible for them to wander about upon the land. They intermarried with each other, possessed flocks and herds, lived in ease and plenty amongst themselves, and at peace with their neighbours. The only warfare they knew was an occasional scuffle, arising out of some trifling disagreement, which was invariably decided at once. In those days armies never slept away from

their homes. A fight was an affair of a few hours, which was settled in a single encounter. Old men in Natal still delight to explain that in those good old times they did not fight to shed blood, or to burn houses, or to capture cattle, or to ruin each other; but simply to settle a quarrel, and to see which was the strongest. The women looked on while the men fought. Prisoners taken in battle were not killed, but held to ransom; and many a young warrior, when the day's struggle was over, would hand his shield and spear to a companion to take home for him, that he might himself go with the rival tribe, and make love to some daughter of the house. The old men who have recently borne testimony to these matters in an inquiry instituted by Mr. Shepstone, the Secretary for Native Affairs in the colony, very expressively say, 'The sun that saw tribes fight never set until their quarrel was ended.' Very rarely indeed any protracted disagreement arose; and whenever such an exceptional case did occur, it was invariably not inter-tribal, but in consequence of the internal splitting of some tribe into rival factions under a disputed succession to the chieftainship. Mr. Shepstone has estimated that it is highly probable as many as a million of Kaffirs were living within the territory that now constitutes Natal, in this peaceful and happy state, at the commencement of the present century.

But about the year 1812 all this was changed. In, or close upon, that year a predatory chieftain with an organised scheme of spoliation and conquest, came down from the north and burst in upon the land, and within a few short years the aboriginal tribes of the district were swept from their homes, and the smiling garden

that had so recently been teeming with happy and prosperous life became a desert and a depopulated wilderness. The chieftain who brought about this change was the barbarian potentate with whom Mr. Fynn had endeavoured to negotiate, when he first arrived in Natal, to forward the scheme of establishing a trading settlement. The chieftain had at that time established a military frontier about thirty miles to the north of Natal Bay, upon the river Umhlali, and had made that frontier the headquarters of his power. The place where his chief residence and encampment was placed is still known in the colony under the designation of 'Chaka's kraal.'

The renowned chieftain, Chaka, was the originator and founder of the Zulu power. Before his reign and career, the Zulus, as a tribe, were almost entirely unknown. They were virtually overshadowed and eclipsed by the more important clans which were immediately around them; and the most considerable of these was the tribe of the Umtetwas, which was under the chieftainship of Jobe. These Umtetwas dwelt in what is now the heart of Zululand, and some few miles beyond the Tugela river, and the old chief of the tribe had two sons who were named Tana and Godongwana, of whom the elder, Tana, had been recognised as the proper successor to his father's place. Jobe, however, seemed to be in no hurry to get out of the way, and the young men becoming impatient at the delay, are said to have entered into some scheme of conspiracy to hasten his removal. The plot reached the old chief's ears, and he gave secret orders that both the young men should be summarily placed beyond the sphere of temptation. The hut in which the two

brothers were sleeping was accordingly surrounded by an armed band in the dead of the night, and a sudden onset was made upon it and nearly all whom it contained, the elder brother Tana amongst them, were killed. The younger, Godongwana, however, who was an active and powerful man, made a sudden rush through his assailants and leapt the outer fence. But he did not escape quite scathless. He was struck by a barbed assegai as he disappeared into the darkness, and carried away the weapon with him in his back.

A sister of the wounded man, aware of what had occurred in the night, managed secretly to discover the place of his retreat in the bush, extracted the spear from his wound, ministered to his immediate needs, and then gave him her own kaross, and sent him privately some young men to attend upon him. At first Godongwana lingered amongst the neighbouring tribes; but they were all too much under Jobe's influence to be safe places of sojourn for him; and so at last he went further away, and disappeared; and for some years nothing more was heard of him.

In the fulness of time, however, old Jobe died, a younger brother of Godongwana, of another house, assumed the government of the tribe, and events moved on quietly for some considerable time, until all at once strange rumours began to circulate amongst the people, to the effect that Godongwana was still alive, and would return to claim his inheritance; and at last it was said that he was actually on his way for this purpose, and that he was coming with might and mysterious power, for no one could say whether he was a man or an animal. Then it was reported that he who was coming was certainly a man, but, marvellous to say, he was

seated upon an 'Ingomane.' This did not make the explanation very clear, as no one in the tribe knew what an 'Ingomane' was. At length, however, both Godongwana and the Ingomane appeared to clear up the mystery, and the Ingomane turned out to be a white horse which the young chieftain had procured from some of the tribes in the far west, near to the frontiers of the civilised settlements at the Cape. When he put in his claim to the chieftainship, his younger brother offered a futile resistance and lost his life for his pains. He proved his identity, and his right, by the scar which he carried in his back. The Umtetwas said that 'his wound was his witness.' Between the scar, and the horse, his claim was very speedily established, and he became the acknowledged Chief of the Umtetwas in old Jobe's place. But in honour of his strange adventures his name was changed. He ceased to be 'Godongwana,' and he became 'Dingiswayo,' which meant 'one who has had to wander,' and as Dingiswayo, or 'the wanderer,' he subsequently reigned.

It appears that after he had got well off from the tribes in the old neighbourhood Godongwana had at last made his way to the Cape Colony in the far west, and had there lived in some fashion or other, amongst white men, and learned very much concerning their habits and doings. He had certainly procured his horse from this source. But whether or not he had come by it honestly was never known. In common with his skill in horsemanship he had, however, acquired some other attainments which he was able to turn to good account. He had seen the power of organisation and discipline, and had especially marked

how the white men banded their soldiers into companies and regiments, under duly appointed officers. As soon, therefore, as he was firmly settled in the chieftainship of his tribe he set to work to organise his own people upon a similar plan. He formed all the young men into regiments, and appointed officers in due subordination to each other, and he very soon had an army at his command exceedingly much more powerful than any force that had ever been seen before amongst the neighbouring tribes. It was but natural that he should then find himself tempted to put to proof this new organisation; and when he did so he found that none of the surrounding chiefs could stand against him for an instant. He accordingly reduced many of them to subservience to his own authority. But it is universally admitted that he was neither cruel nor avaricious. He fought to conquer and to show his own superior ability and power, but he cared nothing about capturing the cattle, and he forbade the destruction of women and children. His great idea was to feed his own army on the grain stores of the vanquished, and to occupy the territory of an antagonist until his corn was exhausted. On this account his opponents generally tendered their submission as soon as they were beaten, and reoccupied their country as the acknowledged vassals of the conqueror the instant his forces were withdrawn. Dingiswayo never destroyed, or permanently dispersed, any tribe that he attacked.

At the time when Dingiswayo was thus occupied in introducing his new system of military organisation and aggressive war, it so chanced, however, that one of the small adjacent tribes that he had conquered was ruled over by a chief named Senzangakona, who had

an illegitimate son called Chaka. This young man was of a turbulent and ambitious spirit, and made himself so obnoxious to some influential members of his father's family, that at last he and his mother had to flee for their lives. Chaka took refuge with Dingiswayo, enlisted in one of his crack regiments, and took part in several of his military expeditions. The gallant conduct of the young recruit in some of these soon won for him a great reputation as a soldier. The fact was that he had accidentally been placed in a position which was congenial to his tastes and to his genius, for he was a man of remarkable ability and power. He studied the policy and the proceedings of Dingiswayo with an attentive eye, and he soon convinced himself that he had discovered the one weak point in the new strategy. He saw clearly that Dingiswayo's generosity and forbearance was a dangerous mistake, because it left the conquered chiefs in a position to combine together at some future time against their conqueror. In his own mind he was satisfied that the only safe way to carry out such a scheme of aggression as Dingiswayo had entered upon, was to inflict such injury upon the conquered as left them no power to rise again, and he resolved that whenever he had the chance he would carry out the great system of Dingiswayo to its full and legitimate conclusion.

Chaka had not to wait long for his opportunity. By the time that he had served in Dingiswayo's army sufficiently long to become familiar with the system of its chief, and to make his own observations upon its defects, his father Senzangakona died, and Dingiswayo, conceiving that his brave subordinate would be a more

serviceable tributary and ally than the legitimate sons of the deceased chief, induced the tribe to accept Chaka, at his hands, as their head. In this way the young Chaka succeeded to the chieftainship of the weak tributary and insignificant tribe of the Zulus.

Chaka continued faithful to his old master, and fought in alliance with him in several campaigns. But he was altogether right in the opinion he had formed of the danger of the position. Some of the neighbouring chiefs, who had been victims of Dingiswayo's raids, had at length taken a lesson out of his book, and, having prepared their plans, combined against him. Dingiswayo was finally caught in advance of the main body of his army, with only a small party of followers, and was taken prisoner and slain. Chaka was with the main army upon this occasion, and led the combined tribes of the Umtetwas and Zulus so skilfully out of the fight, that he was forthwith accepted by both as their common chief. This was the first step made by the Zulu tribe towards an enlargement of its influence and power.

Chaka had thus a clear path open to his ambition. He was now free to adopt his own plan of operations, and to act upon his own ideas without let or hindrance. He at once set himself to the work of establishing the Zulu supremacy, and attacked tribe after tribe of his neighbours; absorbing all the young men as he did so into his own following, and destroying the women, children, and old men. In the pursuance of this object, he introduced several innovations into the art of native South African warfare, which were very remarkable indications of his genius and originality. He distributed his young warriors

into regiments which were distinguished from each other by the colour and pattern of their ox-hide shields, and he trained them to the discipline of serried and solid advance, and of attack at close quarters with the short assegai, or spear. Above all things he instituted an invariable law, that any young soldier who returned from the fight without shield and spear, or with the disgraceful stamp of a wound upon his back, should pay the forfeit of his life. The young soldiers were forbidden to take wives, that they might not be enervated by domestic influences, and distracted from their military duties by domestic habits and ties. But after a certain period of service old regiments were superannuated as veterans, and rewarded with wives, and new levies were raised to take their place in the van of the tribal armament. Whenever an expedition was sent out upon active service, its destination was kept secret from the warriors themselves, until they were far on their way. The immediate attack was always made by a sudden onset of a compact phalanx supported on either hand by advanced troops of skirmishers.

With such a system of carefully planned organisation, wielded by a large measure of ability, and sustained by a ruthless purpose and will, and with only divided and scattered tribes that fought as an undisciplined rabble in the regions that were to be overrun, it is by no means surprising that the name of Chaka soon became a terror and a power. Wherever there were cattle to be seized, or young men to be amalgamated, the ruthless hosts of the Zulu despot appeared, until every tribe between St. John's river in the south, and Delagoa Bay in the north, a distance of full

500 miles, had been either 'eaten up' and dispersed, or reduced into subjection; and this was how it had come to pass that when Lieutenant Farewell and Mr. Fynn formed their first settlement in Natal, the region was an unpeopled wilderness. The earliest burst of the tempest fell upon Natal about the year 1812. At that time crowds of the northern tribes who had borne the first brunt of the Zulu aggression, entered the Natal district from the north, retreating before the advance of the invaders, and as they passed through Natal gave the tribes there a foretaste of what was so quickly to follow by the robbery and spoliation that they were compelled to practise in their own first struggle for existence. Wave after wave of desolation from that time traversed the land as tribe after tribe of the vanquished and retiring hosts passed through, sweeping away all before them as they hastened to place as wide a space as they could between themselves and their terrific assailant, so that when the actual hordes of Chaka himself arrived, there was little left for them to do. It is hardly possible to realise the demoralising and destructive influence that was thus brought into play. The mere instinct of self-preservation, stimulated by terror, turned friends into foes, lifted every man's hand against his neighbour, and caused acts of treachery and atrocity of the most dreadful character. When Chaka had cleared away, or subjugated, all the scattered tribes on the further side of the Tugela, his armies advanced into the already desolated district on the Natal side of that river, and pursued their work of destruction and conquest there. True to his own keener insight into the necessities of his position, the Zulu conqueror at this

time ordained that neither man, woman, nor child should be spared. Every hut was to be burned—all food that could not be consumed by his own warriors was to be destroyed. Some of the weaker of the Natal tribes made a ready submission, and were received into Zuludom as vassals and recruits; but this only made the position of those who attempted to hold out more desperate and dreadful, because the knowledge which these recruits had of persons and places enabled them to give the most valuable and efficient information to the armies of the exterminating despot. When the Zulus had at length passed through Natal, and advanced through Amamponda Land to the south, the last wave of the fugitives who were retreating before them, overflowed into the Cape territory beyond the Kei river, and were seized by the frontier Kaffirs there, to whom they became a sort of slave property under the name of Fingoes. Mr. Shepstone states that he was himself with Sir Benjamin d'Urban, the Governor of the Cape Colony, when, at the end of the Kaffir war of 1836, these Fingoe slaves were emancipated by the Governor himself at the head of a division of the British army.

Within ten years of the first burst into Natal of the tribes, retreating before the advance of the Zulus, the desolation of the country was complete. A few thousands of miserable wretches were still scattered about the colony making the most desperate efforts to cling to their old homes; but their cattle and their grain stores were gone, and they dared not attempt to cultivate the ground, because to have given such a sign of their presence would have been to have brought down the hand of the destroyer upon their

last hopes. They lived concealed in the bushy kloofs and glens, and had literally nothing else to subsist upon but the wild roots which they could dig out of the ground. The whole country at last was filled with the dead, which were left by the emaciated and spiritless survivors to be consumed by the hyenas. Some miserable men, in the extremity of their despair, actually crawled towards the Tugela that they might be 'picked up' by the dreaded soldiers of Chaka. At the present day the old Kaffirs who tell the tale of this period of desolation expressively say, 'The assegai killed people, but hunger killed the country.'

In the year 1824, when the 'Julia' brought its freight of English adventurers to commence their *rôle* in the land where this terrific tragedy had so recently been performed, Chaka was about in the zenith of his power, and the Zulus had become a formidable tribe, made up in the main of the pith and sinew of the tribes that had been broken up by its raids. They held at that time as the centre of their dominion a vast stretch of territory on each bank of the Tugela, but they claimed, and virtually possessed, the land from Delagoa Bay to the St. John's river. Their chief military station was near the White Imfolozi river, which runs down to the sea at St. Lucia Bay. But there was also a large and important military kraal, serving as an advanced post, between the Umhlali and Tongaati rivers, and it was at this advanced post of Chaka that the negotiations of the English settlers for permission to settle and trade were principally carried on. After some prolonged preliminaries, in which presents to the chief played an important part, this permission was at last secured, and three distinct

stations were occupied. Lieutenant Farewell established himself on the sandflat at the edge of the Inner Bay, where the market square of Durban is now placed. Mr. Fynn made his camp on the Umbilo river at the opposite side of the inner harbour; and Lieutenant King, who was also one of the original projectors of the scheme, but who had been in the first instance sent to England to ask for the support of the authorities at home, fixed his residence upon the shore of the harbour immediately under the Bluff.

One of the first consequences of the occupation of these primary posts of the English settlement was that some of the half-starving and wandering bands of natives began to collect around them for countenance and support. Within a few weeks there were forty of these fugitives gathered around Mr. Fynn, looking virtually to him for sustenance and protection, and in that sense adopting him as their chief. Those forty natives were consequently the first nucleus of the repopulation of Natal by the native tribes.

The gathering of these natives round the English settlers, however, soon became a ground of dissatisfaction and complaint with Chaka; but in all probability he did not in the first instance care very much about the matter, on account of the lively sense he entertained of his own predominance and irresistible power. An old Kaffir, who became known as Jacob, played a somewhat important part in the early communications of the English with Chaka. He was a frontier Kaffir from the old colony, who had been imprisoned in Robben Island for cattle stealing, and who was taken out as his interpreter by Captain Owen when he surveyed the Delagoa Bay coasts in the sloop of

war 'Leven.' Jacob was in one of the ship's boats which was accidentally capsized at St. Lucia, and having managed to reach the land he was seized by the natives and taken to Chaka. The chief, finding that Jacob had so thorough an acquaintance with the English and the Cape, saw at once the advantage to which he might be turned, and kept him in an honourable captivity, and Jacob thenceforth became known at the headquarters of the Zulus as 'Thlambamanzi,' the man who was 'saved from the water.'

A small schooner was built at his station under the Bluff by Lieutenant King, and launched in 1828 under the complimentary name of the 'Chaka.' In this schooner, King, Farewell, a Mr. Isaacs, who had joined the settlement with King, and 'Thlambamanzi' embarked, taking with them two of Chaka's principal headmen, Sotobe and Bosombosa, on a visit of friendship and observation, to the old colony. The little vessel, however, was not looked upon with favour by the English authorities, and was detained at Algoa Bay, and after three months' detention was sent back to Natal, somewhat ignominiously, in the charge of the 'Helicon.' Lieutenant King was taken seriously ill immediately upon his return, his illness being apparently greatly aggravated by the failure of his expedition, and by this unceremonious treatment of Chaka's headmen. He died shortly afterwards, and was buried near his shipyard under the Bluff. Presents had been sent to Chaka by the Cape Government, but they were not of sufficient value to satisfy the autocrat's sense of his own consequence. This, however, was not of material importance as events turned out, for only a few weeks after the return of the 'Chaka' from Algoa Bay, the great

chief's own career was brought to a sudden and violent end. He was treacherously assassinated by his brother, Dingaan, while sitting in conversation with some of his old councillors, near to the Umvoti river, and the assassin Dingaan, as a matter of course, reigned in his stead. At first it was conceived that Dingaan was inclined to be friendly to the English settlers, as he sent one of them upon a mission of amity to the authorities at Grahamstown. When, however, this messenger, John Cane, returned, he thought it most prudent to pass on the presents, and reply, which he had brought back for Dingaan, by messengers. Dingaan thereupon summoned him and Mr. Fynn to appear before him. Mr. Fynn records that they were sent for professedly to give some assistance in an expedition which was preparing, but really to be put out of the way as dangerous adherents of the preceding Zulu chief, whose power had now been superseded. Familiar with the custom of the country in such cases, Cane and Fynn declined to obey the summons, and an armed party was thereupon sent down from Dingaan to look after them. Lieutenant Farewell had at this time disappeared also from the scene. He had been murdered a few weeks before by a chief named Queecha, as he was returning from Graham's Town to Natal, through Amamponda Land; and two of his followers whom he had left in charge of his place at Natal, namely, John Cane and Henry Ogle, divided his effects between them, and assumed his place in the administration of the affairs of the settlement. Cane and Fynn, who had private information of what Dingaan was about, retired with their native dependents before the armed party of Zulus, and after a night-

skirmish, in which some of their men were killed, they crossed the Umzimkulu, and remained there until they were able to settle their difficulty with Dingaan. This was ultimately arranged, and in the year 1831 Mr. Fynn was formally appointed by Dingaan to act as the 'Great Chief of the Natal Kaffirs.' Mr. Fynn, however, left the settlement in 1834, in consequence of having received an official appointment in the old colony, and John Cane and Henry Ogle became the chief representatives of its interests.

During the year following that in which Mr. Fynn was thus temporarily withdrawn from the affairs of the settlement, a captain in the English navy, Allen Gardiner, impressed with a desire to bring missionary efforts into the operations on the coast of Natal, made overtures to Dingaan to be allowed to send missionaries to his own chief residence on the White Imfolosi river in Zululand. He was sufficiently skilful as a diplomatist to effect this purpose, and in furtherance of his plan entered into a formal treaty with Dingaan, in which it was stipulated that all Kaffirs who were at that time residing with the English settlers at the Port should be allowed to do so as dependents of the white chiefs; but that their following should be limited to the existing number, and that thenceforth all fresh accessions to the party should be forbidden, and that any of Dingaan's people who attempted to join them should be forthwith returned to the chief. This treaty was formally executed between Captain Gardiner and two of Dingaan's councillors, Umtobella and Zambooza, acting on his behalf, on the 6th of May, 1835.

Captain Gardiner, having conducted this negotiation to a successful issue, returned to England, and then

brought back with him to Natal an agent of the Church Missionary Society, in the person of an English clergyman, Mr. Owen, who was actually forthwith established at Dingaan's own head kraal of 'Umgungundhlovu,' the place of 'the trumpeting of the elephant.' At this time Captain Gardiner had received permission to exercise some sort of magisterial authority over the affairs of the trading settlement in Natal; but this was not looked upon favourably by the settlers themselves, and naturally they did not yield obedience to his commission, such as it was.

An altogether new series of actors, who have exercised a very important influence on the destiny of the colony, began, however, to show themselves in Natal not long after the completion of this treaty by Captain Gardiner. The Dutch inhabitants of the Cape Colony had for some time viewed the course taken by the British Government in the management of the natives settled within its territory with dissatisfaction and distrust. This feeling of alienation and offence was greatly increased, and, indeed, brought up to the explosive point, by the series of events which followed the Kaffir War of 1834, and which had for their inspiration the abolition of forced labour. It was consequently resolved that an expedition should be sent out to explore Natal, of which very favourable rumours had been received, with a view to determine whether it would not prove suitable for an independent settlement beyond the bounds of the British authority. Fourteen waggons were prepared at Uitenhage, and with these waggons a party, led by Pieter and Jacobus Uys, Hans de Lange, Stephanus Maritz, and Gert Rudolph, made their way

along the seaward slopes of the Drakenberg, until they finally reached the trading settlement at the Port, and greatly surprised the English settlers there by their sudden appearance out of the wilderness. The Dutchmen remained for some time shooting and exploring the country, and then returned the same way they came with the information they had gained.

In the following year another detachment of the Dutch Boers, under the guidance of Jacobus Uys, Pieter Uys, Hendrick Potgeiter, and Pieter Retief, succeeded in finding a practicable pass in the Drakenberg mountains, and coming down with their waggons from the Orange River territory, pressed on towards the sea, until they also reached the English settlement at the Port. Retief then, finding that there appeared to have been already some negotiations with Dingaan, as paramount chief, for cession of land, by other parties, determined to go directly to him with fresh proposals on his own part. He accordingly proceeded to carry out this purpose, with a small party of his companions to act as a body-guard, and visited Dingaan at Umgungundhlovu, finding, to his surprise, the English clergyman, Mr. Owen, settled there. Dingaan, after some formal negotiation, finally agreed that he would give the Dutchmen land, upon the condition that they should recover for him some cattle which a Mantatee chief, Sikonyella, had stolen from him. Retief accepted these terms, and, proceeding against Sikonyella, recovered from him 700 head of cattle, 60 horses, and some guns, and then went back to Dingaan with his spoil. In the meantime, while these operations were in progress, nearly a thousand other waggons had followed the first lead of Retief, and had made their way down through

the pass of the Drakenberg into the territory below, and finding it virtually unoccupied, established themselves all over the higher pastures, quite up to the Bushmans river.

Retief, escorted by seventy picked men from his own people, and thirty Hottentot servants, arrived with the restored cattle at Dingaan's kraal on the 2nd February, 1838. The chief, apparently satisfied and pleased with the recovery of the oxen, feasted the Boers for two days, and professed to make a formal cession to them of the desired territory by means of a document which was drawn up by Mr. Owen. He then invited his visitors to take a final leave of him in his kraal, and as they were sitting on the ground drinking beer, unarmed and quite unsuspicious of treachery or harm, let loose upon them an armed multitude, who had been secretly placed in ambush for the purpose, and destroyed them to a man. The Dutchmen fought bravely with their knives, and killed several of their antagonists, but were finally overwhelmed by the thousands who beset them.

The instant this act of treachery had been consummated, the wily savage sent a large armed force across the Tugela with instructions to destroy every white man found there. When this force arrived the Dutch emigrants were scattered in all directions, the young men in pursuit of game, and the women and children resting in their isolated encampments. The Zulus first burst, at break of day, upon a small party which was encamped near the Blaauwkranz river. This party was at once surrounded and exterminated. Other small detachments in the Klip river district met with a similar fate. But the alarm

having been given, the rest of the Boers collected themselves for defence, and surrounded their families with a kind of fortification extemporised out of their waggons. Here they made a successful resistance, as not one of the camps thus formed was taken by the Zulus. In a final struggle, which took place on the Bushmans river, the Zulus were ultimately repulsed, and the Dutchmen then advanced from their laagers to discover the loss they had sustained in the cruel butchery of their kindred and friends elsewhere. At the camp on the Blue Krantz river they found two young girls, Johanna van der Merwe and Catharina Margaretha Prinslo, one with nineteen and the other with twenty-one assegai wounds, but still alive. Not less than 600 other victims had to be added to the tale of the 100 slain at Dingaan's place before the entire loss caused by this savage onslaught was summed.

The Dutch Boers having, however, received large further addition to their ranks from beyond the mountains, now determined to take signal revenge upon Dingaan for his treachery, and the English settlers at the Bay were easily induced to co-operate with them in this act. The English at this time could assemble a force of 1,000 armed men of their own native following. Pieter Uys and Hendrick Potgeiter assumed command of the Dutch contingent in the upland district, and Mr. R. Biggar undertook to lead the coast forces. Biggar crossed the Tugela near its mouth, and found himself unexpectedly, at break of day, in the midst of Dingaan's army, which was lying in wait for him. He and his entire party were in consequence destroyed. John Cane fell in this battle as well as Biggar, and

only one white man who was engaged in it escaped with his life. Uys and Potgeiter on their part advanced directly upon Dingaan's kraal; but they also were entrapped into an ambuscade, out of which they had to fight their way with a heavy loss, both Pieter Uys, the brave leader, and his son being amongst the slain. The victory so far, therefore, was with Dingaan, whose wile, at least, proved to be a match for his antagonists. Some of the victorious soldiers of Dingaan paid a visit upon this occasion to the settlement at the Bay, and swept away everything they could lay their hands upon. The settlers, who had been left there, however, were fortunately able to take refuge in a ship which chanced to be in the port at the time.

Dingaan, emboldened by his success, attempted another fierce onslaught upon the Dutch Boers in August 1838, but upon that occasion, as they were fully prepared for his visit, he was signally repulsed. The Boers, however, remained in their camps in privation and distress through the winter of 1838, until at the end of the year they conceived themselves again prepared to act on the aggressive, having been joined by a considerable number of spirited young men. In the beginning of December Andries Pretorius was at the head of 460 resolute and well-mounted combatants, and having received a small addition to these from a few Boers who had settled near the Bay, he advanced boldly upon Umgungundhlovu, and near the Umhlatoos river encountered the army of Dingaan, stated to be 12,000 strong. An obstinate conflict ensued. The Zulus burst, in their usual way, in the early dawn, upon the Dutch farmers in their laager encampment,

but Pretorius at a well-chosen moment sent 200 horsemen suddenly out of the camp to attack them on the flank and rear. The Zulus were thereupon thrown into a panic, and fled, leaving, 3,000 dead upon the field. Dingaan burnt down his royal kraal, and concealed himself in the bush upon the Umhlatoos river. The Dutch farmers advanced to the burning kraal, and found there the remains of the party that had been destroyed under Retief. The skeleton of Retief was recognised by having a bandoleer attached to it, which contained the document executed by Dingaan, as the cession of the land between the Tugela and the Umzimkulu. The Boers, having only lost four men in this amazingly gallant and successful expedition, retired to their encampments in the Natal Territory, driving 5,000 head of Dingaan's oxen before them. On completing their retreat they were somewhat surprised to find that a small detachment of English soldiers, under Major Charteris, had taken possession of the Port. Only friendly intercourse, however, ensued between the English and the emigrant Boers at this time, and the latter proceeded forthwith to lay out the towns of Pietermaritzburg and Durban, as material proof of their occupation of the land. Pietermaritzburg was named from a fusion of the christian name of one leader (Pieter Retief) with the surname of another (Gert Maritz), and the addition of burg, or town, at the end of the compound. In the year 1839, the township of Pietermaritzburg consisted of six small Dutch houses.

In the meantime Dingaan once again recovered heart, and began to send messages to the Boers, proposing an arrangement, but evidently intending to temporise and wait for another opportunity. It for-

tunately happened, however, that before the opportunity came a split had occurred in his own camp. There was a younger brother of Dingaan's, named Umpanda, who had just arrived at man's estate, and who was entirely destitute of the warlike spirit and the martial tastes of his elder brothers, but who for that very reason had become an object of interest and desire to a considerable party of better-disposed Zulus, who were getting weary of the incessant fighting, especially now that fortune seemed to be inclining away from the Zulu cause. As soon as this new internal movement in the Zulu affairs was apparent, Umpanda of course was an object of suspicion and hostility to Dingaan; and aware of the necessary consequences of this, he took himself off to the River Umvoti, with a considerable following of his own immediate adherents. From the Umvoti he sent messengers to the English settlers at the Bay, asking for their protection, and offering to form a coalition with them for the destruction of Dingaan. These advances of Umpanda were at first looked upon with great doubt and suspicion, and were conceived to indicate some further deeply laid scheme of treachery on Dingaan's part. Ultimately, however, a better opinion of Umpanda was arrived at, and a treaty was concluded upon the base of an offensive and defensive alliance, between him and the Dutch and English settlers, who were quite inclined to act together in the emergency. In pursuance of the objects of this treaty 400 mounted settlers, Dutch and English, assembled, again under the chief command of Andries Pretorius, and at the beginning of 1840 these were joined by a native force 4,000 strong, contributed by Umpanda, this native contingent being under the com-

mand of Nonklaas, a brave and capable leader acting as Umpanda's war-chief. The combined forces advanced towards Dingaan's stronghold, through the Sunday river and Biggarsberg districts, and when they finally came into collision with the Zulus there, a fierce conflict ensued, in which the first brunt of the battle was borne by Nonklaas and his men. At a critical period of the fight, however, two entire regiments of the Zulus went over from Dingaan to Umpanda's side, and this at once decided the fate of the day. The army of Dingaan was broken, and fled; and in its flight was vigorously pursued by the mounted force of white men. The pursuit was continued quite up to the Pongolo river, and Dingaan had to seek temporary refuge amongst some of the remnants of the tribes which had been subjugated in the neighbourhood of Delagoa Bay. His prestige, however, was gone, and he was assassinated by some apt learners, who had been instructed in the arts of treachery by his own distinguished example. As soon as the news of his death was satisfactorily authenticated, Andries Pretorius assembled his forces on the banks of the Imfolosi river, and there, on the 14th of February, 1840, proclaimed Umpanda paramount chief of the Zulus, with the important reservation, however, for himself and his friends, of the sovereignty over the land, from the Black Imfolosi and St Lucia Bay to the St. John's river. They also charged Umpanda, for the little service rendered by his proclamation, a small fee of 36,000 head of cattle, which was immediately paid.

The Zulu despotism and power was thus broken within six years of the first descent of the Dutch Boers into Natal, and, in the main, was unquestionably

so broken by the courage, gallantry, and hardiness of this very remarkable body of men. That their work was effectually performed within this short period has been sufficiently attested by the fact that the Zulus have never again made any successful, or even important, attack upon white settlers in their neighbourhood. Whatever may be the future of Natal, there must ever remain one clear page in its early history for the record of the memorable occurrences of Sunday, December 16, 1838, when Andries Pretorius, and Carl Landman, with 460 Dutch emigrant farmers, encountered in their own stronghold the 12,000 savages of Dingaan, who were the finished outcome of the military system of Chaka, clothed in all the prestige of long-continued triumph and success, and, nevertheless, gallantly scattered them to the winds with the strength of their own right arms.

During the whole of this momentous period in the early history of Natal, the British Government do not appear to have had any very clear idea, or purpose, in regard to this outlying, and yet neighbouring, district. Their only anxiety in the first instance seems to have been that the land situated so near to their own doors should not be made a new stronghold for the employment of forced labour, which they had been rooting out in the Cape Colony, and which avowedly, as a political question, had to do with the large emigration of the Dutch farmers beyond the frontiers of the British possessions. The most immediate, and probably the most influential cause of discontent with the British rule on the part of these Dutch emigrants, was the general liberation of slaves in the old colony on December 1, 1838, just in the midst of the South

African harvest. When Major Charteris occupied the Bay at Natal with a small detachment of British soldiers, it was professedly in pursuance of a resolution 'to put an end to the unwarranted occupation of parts of the territories belonging to the natives, by certain emigrants from the Cape Colony who were subjects of his Britannic Majesty.' This party of soldiers, which had been left under the command of captain Jervis, however, was again formally withdrawn just at the time that the Dutch were starting for their last victorious expedition against Dingaan. The men who were the most influential members of the trading settlements at the Bay, having had ample proof of the indifference of the Cape authorities in the matter, were quite inclined at this time to make common cause with the Dutch farmers, and to form an independent community with them. It was, therefore, quite natural that the Boers, when they had destroyed Dingaan, and found that even the half-friendly occupation by British soldiers had simultaneously disappeared, should have considered that they had at last a clear field before them, and should have set enthusiastically to work to establish themselves in the territory they had thus happily occupied. As Captain Jervis and his small detachment of the 72nd Highlanders, acting under orders received from Sir George Napier, left the Bay in the 'Vectis,' the colours of the free Dutch 'Republic of Natalia' were hoisted upon its shore.

As soon, however, as the Cape Government heard of this energetic proceeding on the part of the Boers, of the setting up of Umpanda in Zululand, of the wide stretch of territory from the St. Lucia Bay to the St.

John's river that was to be claimed, and, above all things, of the flag of the 'Natalian Republic,' it took further thought about the matter, and began to suspect that the withdrawal of the English soldiers had been a mistake. Communications were, therefore, officially made to Pretorius, to the effect that this new-fledged claim to independence could not be recognised, and that his party were still looked upon as men who owed fealty and obedience to the British rule. The Dutch emigrants demurred to this. Some negotiation followed, but the disagreement was at last brought to a practical issue by Captain Smith, with a detachment of 200 of the 27th regiment of infantry and two field pieces, crossing the Umzimkulu river, and marching down to the bay. The track of the soldiers who effected this second military occupation, and who marched for that purpose overland from the frontier of the old colony, can still be followed through Alfred county (the old No-man's-land), where the column made its way through the bush, now cutting a track down to the sea beach, and now forcing a passage up through the strelitzias and wild bananas, to accomplish the crossing of some larger and deeper river. Captain Smith left the post of the Umgaze, close by the St. John's river, on March 31, and arrived at the port of Natal on May 12, 1842. As he passed the Umkomanzi river he loaded his guns, and on reaching the neighbourhood of the port he marched a small detachment of the Cape corps and artillery to the flag of 'the Republic of Natalia,' hauled it down, hoisted the Union Jack in its place, and then spiked a six-pounder gun which was standing beneath, and imme-

diately afterwards formed his entrenched post on the exact spot where a fortified 'camp' still stands, on the sandflat behind Durban.

At first none of the Dutch party appeared, but the soldiers were joined and welcomed by all the English settled round the bay, who reported that they had had a rough time of it since it had been rumoured that English troops were again on the road. Within a short time, however, armed Boers, with Pretorius at their head, made their appearance at Congella, within three miles of the British camp, and Captain Smith marched out to them, with half his force, to summon them to disperse, and to beg of them to return to their proper allegiance. They at first sought to gain time, and professed their intention to disperse; but, meanwhile, they formed a camp at the Congella, and increased their numbers, and on May 23, eleven days after the hauling down of the Dutch flag, they themselves commenced hostilities by seizing about sixty oxen which belonged to the soldiers. Captain Smith, who was by no means inclined to let the grass of disaffection grow under his feet, although he had been in some measure tied by his instructions not to be the first to commence actual conflict, replied to this by an advance upon Congella at midnight. He marched along the low sandy shore of the bay with a thick bush of mangrove trees on his right; a boat was sent up the water-channel with one large gun, and two field-pieces were taken with the troops The attacking party had arrived within a few hundred yards of Congella when a heavy fire was suddenly opened upon them by the Boers posted with their heavy long-range guns along the edge of the mangrove bush. The artillery were

immediately disabled by the unmanageable condition of the draft-oxen under this deadly fire, and Captain Smith had to retreat, as best he could, to the camp, embarrassed by the rising tide, and under heavy loss from the ably wielded guns of the Boers, who were more used to this kind of conflict than the soldiers who were opposed to them. The killed and wounded of Captain Smith's forces during this disastrous night-attack amounted to 47 men. The Boers followed up the retreat to the camp, and on May 26 surrounded the English settlers who had been concentrated at the point near the entrance of the harbour, and seized the military supplies and stores which had been deposited there, and two small vessels, the 'Mazeppa' and 'Pilot,' which were in the bay. A serjeant and guard, and eight English settlers, were made prisoners, who were at once removed to Congella, and a few days afterwards sent up to Pietermaritzburg as prisoners. One of these, Mr. G. C. Cato, is still happily residing on the shores of the bay, a living fragment of this stirring episode from the dawn of Natal history, and still tells how, being somewhat nautical in his tastes, he amused himself during his imprisonment in Pietermaritzburg by sketching in charcoal for the instruction of the Boers, upon the walls of his prison, an outline picture of the Queen's ship that was soon to come to the relief of the party at the port, and how, towards the end of his imprisonment, an occasional bullet made its way through the door from some impatient and over-impulsive young Dutchman who was inclined to make short work with the Englishmen. There were about 330 of the Dutch farmers in arms at this time, and on May 31 they closed round the camp, and regu-

larly formed its siege. One of the officers of the 27th regiment who was concerned in these incidents gave an admirable description of these Boers, which sheds a very interesting light upon the marvel of their successful struggle with Dingaan. He spoke of them as having the very best description of guns, which carried heavy balls of from 8 to 17 to the pound; as having good horses, and riding well; as fighting only in skirmishing order; riding within shot of the enemy, dismounting, firing, and then mounting and retiring out of range; and as being practised and unerring shots. A somewhat amusing instance, however, also occurred of the way in which men colour what they see by the impressions already established in their minds. One of the buglers of the 27th had a good look at Andries Pretorius, the hero of the successful attack upon Dingaan's capital, when he came to confer with Captain Smith, and described him in the following words:— 'He is about six feet high, and has a body on him like the bass drum.'

The Boers, upon their own free impulse, removed the women and children who were in the camp, under a flag of truce, and put them on board one of the vessels in the bay. They then made regular trenches round the camp, and set to work to fire into its defenders with their elephant-guns and with four and six pounders served with leaden balls cast for the occasion in moulds, two of them being guns taken from Captain Smith in the night-attack upon Congella. The beleaguered camp was put upon short commons and horse-flesh; and for some days the attack of the Boers, and the resistance of the English soldiers, was maintained, the chief reliance of the Boers being upon

the inability of the latter to continue their resistance long without supplies of food.

There was, however, fortunately for the beleagured troops, one circumstance working in their behalf which had not entered into the calculation of the Boers. When Captain Smith had retreated to his camp, after the check at the Congella, he had immediately taken steps to communicate news of the untoward occurrence to the advanced posts of the Cape Colony. He consulted with Mr. G. C. Cato as to how he could most promptly forward dispatches to the Cape, and he could not possibly have had a more able counsellor in his need; for Mr. Cato was fertile in resource, prompt in action, loyal to the back-bone, although he has since yielded somewhat to the blandishing seductions of the 'stars and stripes,' and knew every inch of the ground that surrounded the Port He immediately volunteered to carry the dispatches himself through the wide intervening track of wild land, which it had taken Captain Smith forty-two days to traverse upon his advance. Captain Smith thought it better that Mr. Cato should himself remain with the English at the Port, and Mr. Cato accordingly selected a substitute for the more arduous service in the person of Mr. Richard King, afterwards well-known as a thriving and successful planter in the coast district of the Colony. Two horses were swum across the waters of the Bay, and Mr. King was sent over as quietly as possible. He was, however, seen, fired at, and pursued. But as he was well horsed, and had a good start, he got clear away, and when the Dutch lines were closed round the camp, and the Point definitely occupied, he was happily well on upon his lonely journey towards the Cape frontier.

He crossed the Umkomanzi and the Umzimkulu, and in ten days from the time of his leaving the Bay he placed his dispatches in the hands of the officer commanding at one of the frontier posts beyond the St. John's river, having ridden with his two horses, in that short period, 600 miles. The fourth day after that on which the Boers opened fire upon the camp, the military authorities at the outposts of the Cape were aware of Captain Smith's urgent need for help. Eight days later the Mazeppa which was still lying in the Bay with the women and children on board, managed to slip her cable and get out to sea, and forthwith made sail upon the same errand as Mr. King, in charge of a brother of Mr. Cato's. But long before her escape from the grasp of the Boers the all-important communication had been made. At the very time that the Mazeppa was slipping out to sea, the Conch, a small schooner under the command of Captain Bell, afterwards many years Port Captain at Durban, was leaving Algoa Bay with a reinforcement of 100 men and two guns, under Captain Durnford's command.

On June 18, the beleagured force in the camp were still holding out resolutely, and repelling all attempts to penetrate their defences, but at that time they were reduced to an allowance of 6 ounces of horse-flesh, and 4 ounces of biscuit dust, per day. On the night of June 24, rockets were seen by them, thrown up as signals from the sea, the Conch, with her reinforcements having just made the anchorage. On the following evening she was joined by the frigate 'Southampton,' the Admiral's Flag Ship from the Cape, with much larger reinforcements, and rocket signals appeared again. On the 26th, the entrance of the bay was forced, a large

body of the troops were landed, once again the insurgent flag of 'Independent Natalia' was hauled down, and communications were established with Captain Smith, whose position was found by the sound of his guns. The Boers at once retreated from the unequal contest, and took up their position about twelve miles off, on the road leading up to Pietermaritzburg, at that time mustering 400 men, and five guns. The relief of the besieged camp was, in this way, accomplished within 30 days of Mr. King's start from the Bay on his adventurous ride.

Colonel Cloete, who was in command of the reinforcements, shortly afterwards advanced towards Pietermaritzburg, and the Boers withdrew as he advanced. Pretorius sent in messengers proposing to treat for an arrangement, but Colonel Cloete replied that the first preliminary to any negotiation must be the unconditional submission of the Boers. This was at length given in on July 5, nine days after the landing of the troops, and when the Colonel had advanced nearly to Pietermaritzburg, an amnesty being granted to all who had been engaged in the resistance, with the exception of five individuals who were most compromised in the transaction. These five Boers thus historically distinguished as the great leaders in the organisation of the Republic of 'Natalia,' were Andries W. Pretorius, Joachim Prinsloo, J. J. Burgher, Michael van Breda, and Servaas van Breda. The terms which were further attached to this submission were that all prisoners were to be released, all cannon to be given up, and all property that had been seized, whether public or private, to be restored. But it was also provided on the part of the English Commander that

the emigrant farmers should be allowed to retain their guns, horses, and farms; that they should be protected against the Zulu-Kaffirs; and that they should be free to carry on their own administration of affairs until the views of the British Government at home, in the matter, were known. Andries Pretorius was subsequently included in the general amnesty, by a special act ,on account of his prompt co-operation in the arrangements of the surrender, and on account of his considerate and humane treatment of the prisoners who had fallen into the hands of the Boers. The greater part of the forces were sent back to the Cape, and Captain Smith, promoted to the rank of Major, remained in military occupation. Affairs then continued in this position until the following year, when a Special Commissioner was sent from the Cape to make a final settlement of the claims of the Dutch for land. Under this settlement it was arranged that the Drakenberg should form the Northern limit of the British Colony, and that the emigrants should remain free to deal with the upland plains beyond that limit in any way they pleased. Twenty-four of the Boers, then acting as a Council, or 'Volksraad,' with Andries Pretorius at its head, confirmed the acceptance by the Dutch emigrants, under this limitation, of the annexation of Natal as a British Dependency. In this act of settlement it was stipulated that there was to be no distinction of 'language, colour, origin, or creed,' within the boundaries of the British Colony, and that slavery should be forbidden in every form. The formal act, which thus practically marked the official birthday of Natal as a colonial possession of Great Britain, was consummated on August 8, 1843.

CHAPTER VII.

BRITISH COLONISATION AND RULE.

For some time, after the first settlement of the colony, its affairs were administered by Major Smith, acting as military commandant; but civil and judicial matters were left pretty much in the hands of the Volksraad elected by the Dutch settlers. In the year 1845, however, a Lieutenant-Governor appeared with a commission from England. This first Governor of Natal was Mr. Martin West. When he assumed the reins of Government there was again some disaffection and dissatisfaction on the part of the Dutch emigrants, and some of them withdrew into the higher districts of the colony, about Klip river, and set up an independent claim to that part of the country. In a short time, however, all the most obstinately disaffected of this party trncked still further away over the mountains. In 1848, Sir Harry Smith visited Natal as High Commissioner, with instructions to make some re-adjustment of the Dutch claims, mostly in the direction of enlargement of their holdings of land; but English settlers now began to make an appearance on the scene, and the Dutch emigrants, accordingly, soon lost much of their early preponderance in the social arrangements. Lieutenant-Governor West unfortunately died in the colony

within five years of his appointment to the Government. He was succeeded by Mr. B. C. C. Pine, the gentleman who has recently again administered the Government as Sir Benjamin Pine. Resident magistrates were appointed by Lieutenant-Governor Pine throughout the colony, in 1851, and in 1853 municipal institutions were established in Pietermaritzburg and Durban, and Pietermaritzburg was made a city and a Bishop's See, by letters patent from the Queen.

Soon after the appointment of Lieutenant-Governor West to the administration of the Government, a commission was formed for considering the position of the natives in Natal. The commission consisted of Mr. T. Shepstone, who had been diplomatic agent for the natives at Fort Peddie in the old colony, and who now received a similar appointment in the colony of Natal, Dr. Stanger, the Surveyor-General, Lieutenant Gibb, and two missionaries belonging to the American Board, namely, the Rev. N. Adams, and the Rev. W. Lindley. It was estimated at this time that under the inducements furnished by the protection of the British rule, the native population within the colony had grown to close upon 100,000, and it was felt that some definite plan must be formed for their accommodation and orderly government. It had been proposed by the Dutch Volksraad that this black element of the community should be summarily ejected over the north and south frontiers; but this was held by the Government to be altogether inexpedient and unjustifiable, and it was suggested that a recommendation of Mr. Cloete, who had acted as commissioner for settling the land claims of the Dutch emigrants, should be acted upon, and that the natives should be settled down in a series

of separate districts reserved to them as 'native locations,' each to comprise from 5,000 to 10,000 individuals. This plan was ultimately adopted, and the Kaffirs were removed from all other lands, and placed in these reserved districts, under their native chiefs, who were, however, held to be responsible to the resident magistrates for their rule. It was also arranged that all petty cases of dispute between the natives should be settled, under the decisions of the magistrate, in accordance with their own traditions and habits; but that all more serious cases of offence, and all disputes between Kaffirs and European settlers, should be referred to the ordinary laws of the colony.

In the sense, however, that it was desirable to check, rather than to favour, the rapid increase of this native element of the population, it was determined that all refugees coming into the colony for protection from neighbouring independent tribes, should earn their naturalisation by three years industrial service to some white master, under contracts entered into before a magistrate in which proper rates of wages were ensured, and that they should not be allowed to bring their cattle with them in any case. The advantages which were secured to the natives under these arrangements were, nevertheless, so great, that their numbers increased with altogether unanticipated rapidity. In the year 1867, it was estimated that the Kaffirs in Natal must amount to, at least, 200,000; and it is now reckoned that they number between 300,000 and 400,000. In their own reserves these people dwell, for the most part, in the most primitive way, in thatched huts, formed entirely of grass, and shaped something like beehives, which are grouped into villages

or kraals. They have cattle, sheep, and goats feeding over the pastures by day, and herded at night in the close neighbourhood of their kraals. They have also gardens, rûdely planted with vegetables and grain crops. Each section of this black community has again its own head, as of old, who is in many cases the direct lineal descendant of some former chief; but there is this important distinction between the present and the past, that the chief is now but a subordinate patriarch; he is, so to speak, a lieutenant, instead of a supreme chief, obedient to the magistrate who is over him, and responsible to him for all his acts. He has the power to take cognisance of petty disputes, and to punish petty offences, after the manner of his fathers; but there is always a ready appeal from his decisions, in the first instance to the resident magistrate of the district, and afterwards, in case of need, to the Secretary for Native Affairs, who has grown as a natural development out of the old diplomatic agent, and is now the great centre and head of the native administration, immediately under the Lieutenant-Governor himself, and is virtually the responsible protector of the interests of the Kaffirs. The tribes are subdivided into territorial districts, villages, and families; and each of these subdivisions has its own appropriate and responsible head, who, in his turn, looks to the chief man of the division next above him. This organisation is so complete that any order, emanating from the Governor, can be forthwith promulgated in every native hut in the land, although it has, under the necessities of the case, to be transmitted entirely without the instrumentality of written documents This system and organisation have answered the pur-

pose for which they were designed admirably, so long as the reverence for the supreme authority remained in the native mind; and they were based upon the assumption that, as there are so many subordinate chiefs, in case of the recusancy of one, the rest can always be employed by the Government to support and enforce its authority. This, indeed, as a matter of fact, has hitherto actually been done. In the year 1857, a quarrel having taken place between two petty chiefs residing on the Umkomanzi, which led to a conflict, in which one of the chiefs and twenty of his men were slain, the survivor, named Usidoi, was summoned before the magistrate to render an account of the occurrence. In fear of the consequences he did not obey the summons. He was then called upon to appear before the Lieutenant-Governor, and as he still refused to present himself, a native force, under the command of the Secretary for Native Affairs, was sent to look after him. He fled on the approach of Mr. Shepstone. He was, thereupon, deposed from his chieftainship, and another man put in his place, and the tribe were fined 7,000 head of cattle. By this procedure the authority of the Government of the country was effectually vindicated. The tribe have lived in orderly obedience ever since, under their new chief, and Usidoi remained outlawed beyond the frontiers of the colony until the past year, 1875, when he was allowed to return into Natal, but not to resume his position as a chief, upon a payment of a fine of 50*l.*, and upon submitting himself to the clemency of the Governor. In the same year, 1857, a man belonging to Matyan's tribe on the Klip river, who had been seized and roughly treated by the chief under a sus-

picion of witchcraft, died in consequence of the rough handling. Matyan was thereupon required to answer for his death. He refused to appear, and surrounded himself with armed retainers. A party of the natives from another part of the colony was, therefore, sent to support the magistrate, and to carry out his instructions. Matyan retired into the bush with his entire tribe, and the Government Kaffirs swept through his location and seized 7,000 cattle as a fine. Some of Matyan's people were killed in an attempt to rescue the cattle, and upon another occasion, to apprehend Matyan himself. The entire tribe was, however, broken up, on account of the countenance it had given to the resistance of the chief, and Matyan himself had to fly across the Tugela into Zululand, where he has remained as an outlaw and exile to the present day. In 1866, when the Government of the colony took possession of 'No-man's-land,' Ukane, the chief of the Amakolo, sent word that he belonged to Faku, and not to the Queen, and that he would not have anything to do with the English. The acting Lieutenant-Governor answered that if that were the case he must at once move off out of the English dominion, and take all his belongings with him, and that he himself was coming out in a few days to see that this order had been obeyed. When the Governor went up, after about seven days, he found that Ukane, and two of his chief men, had disappeared and hidden himself, but that all the rest of the tribe and its cattle, were remaining quietly in their old place. The Governor then ordered the whole to be removed beyond the Umtamvuna river. Ukane upon that made his appearance, and assured the Governor that he was one of the most loyal of the

Queen's subjects, and wished to remain where he was. The Governor consequently fined him 200 head of cattle for the trouble he had given, and allowed him to remain. A still more recent and notable instance was afforded in the case of the breaking up of Langalibalele's tribe (to which a more special allusion will yet have to be made), which was effected by an armed force of loyal Kaffirs, under the personal direction of the Lieutenant-Governor, and the Secretary for Native Affairs.

The isolation of the natives in these several reserved locations, and the maintenance amongst them of so many of their old traditions and modes of thought, on the other hand have materially tended to prevent the introduction of civilisation amongst them, a result which has also been substantially aided by the continued infusion of the leaven of fresh barbarism in the form of the unceasing accession of refugees from the outer tribes. The practical consequence of this isolation is the most curious and remarkable circumstance, that when the English traveller rides into the recesses of any of these native locations, he finds himself all at once in the midst of a people who are, in all particulars, essentially what their ancestors were before the rise of Chaka's power. They dwell in their straw beehives almost naked, and sleep on the bare ground, with a forked stick for their pillow, and with nothing but a couple of stones to grind their corn, the men basking lazily in the sunshine, while the women hoe the ground, and the household furniture and appliances being limited to a central clay hearth without any chimney, and to a few beer pots and milk dishes of woven-grass, and sun-dried clay, with, perhaps, the

addition of one or two wooden spoons. In a very large proportion of instances the only visible sign that they are in the vicinity of civilised neighbours is furnished by the iron hoes which are used by the women in tilling the gardens.

It will, of course, be distinctly understood that the very rapid, and very large multiplication of the native, or black population of Natal, is due, not to natural increase, but to the continued streaming in of fresh hordes of seceders from the tribes dwelling beyond the frontiers of the colony; and that, to a considerable degree, this influx of the natives has been a regurgitation of the exodus which was originally brought about by the aggressive onslaughts of Chaka and Dingaan. Although many of the tribes which primarily dwelt in the Natal district were utterly exterminated, and thousands upon thousands of people were destroyed, there yet remained fragments which had escaped from the desolating tempests. The so-called Zulus themselves were in reality composed of such fragments saved from the wreck of the old tribes by their prompt amalgamation with the ranks of the conquering army. The Secretary for Native Affairs made a very interesting investigation upon this point during the administration of Governor Scott, and he found that it was still possible to recover the names of 92 original tribes which had dwelt in the region that now forms the colony of Natal, before the invasion of the Zulus; and that of these 92 Aboriginal tribes 43 are still represented in the tribes of the colony. Besides these 43 primitive tribes, there are also now in the colony 9 composite tribes, which have been made out of small fragments of other aboriginal tribes, united together by a species of fusion, in all such cases new names having been

conferred upon these composite gatherings; and there are also 7 tribes which were present in the colony at the time of the British annexation of the land, but which were not native to the district at the time of the Zulu eruption. These were, probably, tribes that had been drawn to the district either by the hope of protection from the white settlers, or of some other advantage to be derived from residence there.

The 43 aboriginal tribes still represented in Natal are :—

Amacele.
Amendelu.
Amahlongwa.
Amasomi.
Amandhlovu.
Amatuli.
Amaganga.
Inyamvino.
Amadunge.
Amancolosi.
Amantshunyasi.
Amakabela.
Amapepeta.
Amazondé
Amaxamalala.
Amampumusa.
Magenga.
Amafunze.
Amabaca.
Amambedu.
Amangamvu.
Amabambo.
Amahlube.
Amabelo.
Amazizi.
Amakuze.
Abatembu.
Amapumulo.
Amagwabe.
Amawquswa.
Amagadé.
Awaosiyane.
Amahlala.
Elanyeni.
Emalangeni.
Amabiya.
Amakanya.
Amamemela.
Enblangweni.
Amapemvu.
Abamkulise.
Amanyongoma.
Amalanga.

The new composite tribes of Natal Kaffirs are :—

Amaduma.
Isinkumbi.
Amaximba.
Tolani.
Abatwa.
Amaquanya
Esinyameni.
Izombe.
Nozitshina.

The tribes which have voluntarily naturalised themselves in Natal, although not properly belonging to the district before the Zulu invasion, are :—

Abasembo.	Amungwana.
Amabaso.	Amulata.
Amabomvu.	Esibisini.
Amacunu.	

It will thus appear that there are, at the present time, 59 distinct tribes of natives in Natal living under the British protection, and looking to the Lieutenant-Governor as their supreme head.

When the Dutch emigrants gave in their submission to the British re-annexation, each Boer was allowed to continue to occupy 6,000 acres of land as his own share of the annexed territory ; and not long afterwards this apportionment was, in some instances, increased to 8,000 acres, upon the plea that a family could not be adequately supported on so small an allotment as 6,000 acres of land. Sir Harry Smith, when he visited the colony as High Commissioner, offered free grants of farms of this size to any Dutch farmer who would settle in the colony. A very considerable portion of the best pasture land in Natal was disposed of in this way, and the original boundaries of these large grants are still retained in many of the up-country farms. For the most part, the land which was set apart for the Kaffir use was of a more rugged character, and unsuited for the maintenance of large herds of cattle.

The first material stimulus which was given to the introduction of English settlers occurred in the year 1847, during the government of Mr. Martin West. At that time a gentleman, named Byrne, arranged a plan for the introduction of English settlers upon the under-

standing that he was to deposit 10*l.* with the colonial Government for each adult immigrant introduced, and to receive, in return, 50 acres of crown land, of which 20 acres were given to the immigrant, and 30 acres retained by the organiser of the scheme. In a short time afterwards the Government added other 25 acres to the settler's share of the allotment. In the course of a few months not less than 2,500 settlers were introduced under this plan. But the land made over to the settlers was cut up into regular parallelograms, without any consideration for its character and fitness, and besides this, the allotments were very much too small for profitable occupation in the circumstances of the colony. For these, and some other collateral reasons that it is not now important to specify, the scheme failed entirely to effect the industrial settlement upon the land which was contemplated. Very few, indeed, of the settlers who were introduced remained upon, or even used, the portions of land assigned to them. But so many fresh arrivals in the colony produced, nevertheless, a most beneficial effect. A community was at once created, in which mutual service for the various necessaries and comforts of life was required; and in this way all the new comers were rapidly absorbed into some kind of useful, industrial occupation. A considerable number of the most thriving and influential colonists at the present day are men who were originally drawn to Natal by the inducements of this crude and ill-digested scheme. But as soon as the insufficiency of the plan became apparent from the non-occupation of the land by the immigrants, all further introduction of immigrants of course ceased. During the years 1851, 1852, 1853, and 1854, while

the influence of the new arrivals was still felt, the yearly value of imports into the colony was 110,000*l.* But in the year 1855, when the introduction of fresh settlers had almost entirely ceased, the value of imports fell to 86,000*l.*

Shortly after this period, once again an attempt was made to draw European settlers to the colony, by grants of land upon condition of occupation, and this time the grants were made upon a more liberal scale. Sir George Grey, who retained certain special control over the affairs of the colony as Governor-General of the Cape, gave grants of 1,500 acres in extent to any eligible applicant; and almost immediately afterwards the young Legislative Council, which had just been established by a Royal Charter in the colony, increased the extent of these grants to 3,000 acres, upon the condition that the recipient should pay a tax of 15*l.* a year to the Government if he did not productively occupy his holding. Many of the 'Lack-lands' who were on the spot availed themselves of the opportunity to become proprietors of the soil; but these liberal provisions scarcely operated in bringing new recruits to the colony, as was designed, because Lord Stanley, who was at the time Her Majesty's Secretary of State for the Colonies, conceived that the actual results of such proceedings would be the throwing of considerable tracts of land in the colony into the hands of men who would absorb and hold them for purposes of speculation, instead of planting industrious and thriving occupiers upon them. The proposals of the Legislative Council were, therefore, disapproved, and the granting of land was stopped.

From the year 1858 to 1866 the only inducement

that was offered for quickening the influx of white settlers into Natal was, that the Government allowed residents within the colony to bring out their friends, under an arrangement in which passages were provided by the Government, upon such residents entering into an undertaking to repay a portion of the cost so incurred by stipulated instalments. Under this plan 1580 fresh settlers were introduced into the colony during the nine years ending with 1866.

In the year 1866, small land grants of from 50 to 200 acres, with a right of the purchase of some further holdings, was again sanctioned for settlers who proposed to enter upon the cultivation of the land, and who had some resources to enable them to do so and to meet the first cost of starting in a new field of enterprise; and assistance towards the charges of the passage was, in some instances, also supplied. During three years, between 500 and 600 statute adults were landed in Natal, with these facilities; but in the year 1869, in consequence of a proposal having been submitted to the Government, and received with some favour by the Legislative Council, for the construction of a trunk line of railway, under the condition of the Crown Lands of the colony being reserved for the constructors of the works, and also on account of the great difficulty, under these terms of limitation and selection, of getting suitable settlers to avail themselves of the opportunity, the Land Grants were again discontinued.

It is a very notable, and, in one sense, instructive historical fact, on account of the bearing which it has upon the general prospects and social character of the colony, that during the time in which the black population has increased eleven fold, that is, from 25,000

to 280,000, the white population has increased rather less than threefold, that is, from 6,000 to 17,000. In the year 1835, the white population amounted to 16 individuals. In 1840, it numbered 6,000, and they were almost exclusively the Dutch immigrants, who had come in over the Drakenberg Mountains from the Cape Colony. In the year 1861, the white population was returned at 12,538, the increase being then mainly due to the accession of English settlers. The white population during subsequent years has been,—

For 1863	13,990
1865	16,369
1866	16,673
1867	16,963
1868	17,202
1869	17,210
1870	17,821
1871	17,737
1872	18,425
1873	17,290
1874	17,182

Lieutenant-Governor Pine's term of service having expired in 1856, he was succeeded in the administration of public affairs by Lieutenant-Governor John Scott, whose advent in the Colony was memorable from the fact that he had with him an amended charter from the Queen, whereby an elective legislative assembly was created, and Natal made into a dependency altogether distinct from the Cape, to which previously it had been a subordinate department. By the new charter it was provided that the Lieutenant-Governor should be advised by an executive council composed of the Military Commandant, the Colonial

Secretary, the Secretary for Native Affairs, the Chief Justice, the Attorney-General, and the Treasurer. But a legislative council was, at the same time, constituted, which consisted of twelve members, elected by the general constituency of the Colony, and of four members who sat as officers of the Government. All money votes were required to be submitted to this assembly for acceptance, or rejection; and all laws were to be enacted by it; but the decisions of the assembly were to be subject to the sanction either of the Lieutenant-Governor or of the Queen. A sum of 5,000*l.* a year, however, was reserved out of the general revenue to be applied, at the discretion of the Governor, for the advantage of the natives of the Colony; and all questions of native policy that concerned relations with the native tribes outside of the Colony were to be dealt with by the Governor of the Cape, acting as High Commissioner for native affairs.

Mr. Scott's term of office extended from the proclamation of the new charter, and the establishment of the Legislative Council, to the year 1864, when he was succeeded by Colonel Maclean. In consequence of Colonel Maclean becoming seriously invalided, Mr. Robert Keate was appointed to the Government in 1867. Upon the expiration of his term of office, in 1873, he was followed by Mr. Anthony Musgrave, and in 1874, Governor Musgrave was succeeded by Sir Benjamin C. C. Pine, already named as having acted as governor in the earlier years of the colonial history which immediately preceded the establishment of the Legislative Council.

After the power of Dingaan had been destroyed by the Dutch immigrants, and Umpanda had been set

up in the deposed chief's place, he very naturally entered upon his task of ruling the tribe in the full spirit of friendship to the men who had been the immediate means of his advancement to the succession. He was quite prepared to transfer his friendly allegiance to the English Government, when this superseded the rule of the Boers, on account of the intercourse he had already had with the English settlers at the Bay; and this amicable relation with the Government of the Colony continued uninterrupted through this chief's long reign of thirty-two years. From the very first he was of an unmartial character, and in the progress of time, the naturally peaceful bent of his character was very materially increased by his acquiring so vast a size, that it effectually incapacitated him for all active exertion. Dingaan surprised Captain Gardiner by his portly proportions when he first disrobed before him to take part in the dance; but Dingaan was as a graceful stripling in comparison with his younger brother in the ripeness of his years. Long before the end of his career, Umpanda had to be inducted into his waggon, whenever he had occasion to change his residence, by taking off the front wheels, and sliding the royal body in, and by then lifting the waggon and the body together for the re-adjustment of the wheels. There was, however, one circumstance which threatened to trouble the pacific chief's friendly relations with his white neighbours as time travelled on, and which no doubt did occasion him much mental anxiety in his advancing years. Like all chiefs of these South African tribes, Umpanda soon had a large family growing up around him, and just about the period when the colony entered upon its new phase of political

life under the government of Mr. Scott, some of his sons were arriving at man's estate, and it soon became apparent that the first-born amongst these, Cetywayo, had much of the restless spirit, and some of the martial ardour and intellectual capacity of his uncle Chaka. He accordingly, as occasionally happens with heir-apparents in more civilised lands, soon had a following of his own and a political party surrounding him; and, in Cetywayo's case, this party was naturally composed of the hot blood of the tribe, of the young men who had heard of the glories of Chaka, and who had had no personal experience of the penalties and sufferings that such glories entailed, and who, therefore, hoped to see a renewal in the successor of Umpanda of the days of abundant booty and triumph. Cetywayo was quite clever enough to know how best to turn this not unnatural craving of the young men of his tribe to account. He accepted the homage and service which were tendered him as matters of course, and fostered the traditional reverence of the young men, but at the same time took care to keep their ardour in hand, and to prevent them from compromising him with his powerful neighbours on the other side of the Tugela. Umpanda meanwhile manifested no disposition to establish the succession in the person of Cetywayo, and was conceived rather to favour the pretensions of younger sons in consequence of the position of *quasi* royalty which was assumed by the elder. In the year 1856, it was rumoured in Natal that another of Umpanda's sons, Umbulazi, was also forming a faction in the tribe, and that as this was believed to be regarded with some satisfaction by the King, Cetywayo was resolved to prevent by the strong hand all chance

of successful rivalry with himself. In consequence of some threatening manifestations of this purpose, Umbulazi withdrew, with his own particular adherents, towards the Tugela. But this movement, on his part, only gave point to the suspicions of his brother, as it seemed to him to indicate that Umbulazi was expecting support, or at least countenance, from the Government in Natal which was well known to be the firm friend of the old chief. At a critical moment one of the principal advisers of Umpanda declared his adhesion to the pretensions of Cetywayo, and took over a large party of the old king's most trusty followers with him. Cetywayo thereupon followed his brother with an overwhelming armed force. Mr. Tönnesen, who was at that time attached to the Norwegian Mission Station, in Zululand, has given a most graphic description of the sudden arrival of Cetywayo's force in the neighbourhood of this place as it pursued Umbulazi. All at once scouts appeared suddenly on the hill tops around, as if they had arisen out of the ground by magic, in the late evening, looking like small dark specks against the bright sunset sky. These scouts at one moment were concealed behind the large war shield advanced before them as a screen; then they assumed the aspect of big spiders from the protrusion of their arms and legs; and then more and more appeared upon the hills, and upon the higher ledges, all moving rapidly, but with the utmost silence, in one direction. After a brief time, a dense black mass poured forth from a valley about a mile and a half away, and advanced into the plain between the rivers Umhlatuzane and Umatikulu. This was one of the three divisions into which Cetywayo's army was distributed, the whole

force having assumed the designation and the war cry of 'Usutu;' in contradistinction to Umbulazi's party, which was known amongst them as the 'Usixosa.' On the following day Cetywayo himself came forward into the plain with another division of his men, and the two divisions then encamped for a couple of days, until they had satisfied themselves that Umbulazi was not hidden in the dense forest around, with a view of getting into their rear when they advanced beyond. From what Mr. Tönnesen gleaned from the adherents of both sides, his own impression was that Umpanda had in reality no very strong predilection to either party; and that the idea that he favoured Umbulazi arose chiefly from the representations made for their own purposes by that chieftain's people as they came along, and with a view to increase his adherents. Cetywayo obviously suspected that the 'Usixosa' were favoured by the English, and not altogether unreasonably, as it afterwards appeared that some white men from beyond the border did fight on their side. It is, however, a notable and very remarkable fact that the white missionaries were in no way molested or harmed, during the sojourn, or passage, of Cetywayo's force. Of the three divisions, one was commanded by Cetywayo himself; a second was led by a chief, named Uzemala; and the third by a young Dutchman, named Christian Greening. On the third day the 'Usutu' all passed on towards the Tugela, and they ultimately found Umbulazi upon an eminence near to the Tugela river. The main body of the army attacked him there with some vehemence, and while he was meeting this attack by the help of some white men, with firearms, who were with him, the two wings

pushed forward on each side to surround him, and cut off his retreat upon the river. As soon as the attacked party became aware of this movement they fled precipitately, and fell by hundreds beneath the assegais of their pursuers. It also happened unfortunately that the river was in full flood at the time and that, in consequence, a great number more were drowned in attemping to cross the stream. Umbulazi, and five other sons of Umpanda were slain in this battle, which was fought on the banks of the Tugela, on December 2, 1856, and which was known to the Kaffirs as the battle of Dondukusaka. Umpanda was greatly grieved at the occurrence, and at the death of his sons; but Mr. Tönnesen remarked that he was quite sure he would have been equally concerned if victory had inclined the other way and Cetywayo, and his brother Oham, who sided with him, had fallen. The strife was one which Umpanda deplored bitterly on every ground, but which he was entirely powerless to prevent. It was reported at the time that Cetywayo intended to pursue Umbulazi over the frontiers of the colony if he had succeeded in passing the river. But Mr. Tönnesen was confident that no step of this kind was contemplated, or would ever have been taken. Cetywayo was surprised when he heard that the frontier police of the Natal Government had borne some part in the fight, most probably under the impression that there was risk of the victorious party pursuing the vanquished into the colonial territory in the ardour of success.

But this battle on the Tugela did involve one consequence which has exercised a material influence over the position of the Colonial Government in re-

spect to its relations with the Zulu tribe. Two other sons of Umpanda, younger than those who fell, but who, most probably, would have met the same fate if they had not been removed beyond Cetywayo's reach, were concealed by some of Umpanda's friends and secretly conveyed with their mothers, over the mountains, and then brought into Natal and placed under the protection of the British Government. It was pretty generally understood that this step was taken with Umpanda's sanction, if not at his express desire. But that manifestly would not make the act more palatable to Cetywayo. The two lads, Usikota and Umkungu, have since remained in Natal and have grown there to men's estate. But it has been very difficult for Cetywayo to believe that the Government would have been at the trouble of their maintenance and protection, unless there was some stronger reason for the act than mere general benevolence and philanthropy.

After the conflict on the Tugela, and the destruction of Umbalazi, Umpanda became continually less influential in the government of the tribe and Cetywayo more powerful and dominant in the ordering of its affairs. The King was still treated with outward respect, and his person held sacred by all parties; but it was considered that he was too passive, and too infirm to be the actual leader of the tribe, and accordingly a general assembly of the people was called together at the King's kraal, in 1857, to arrange some definite plan to meet the emergency. In that meeting it was ruled that Umpanda was the 'head' of the tribe, and, therefore, quite competent 'to think'; but that the tribe wanted 'feet' as well as 'a head', and that Cetywayo should consequently be, thenceforth, recognised as the feet

whenever action or movement was required. From that time Cetywayo assumed the formal position of chief Induna, or head manager for the King; and all important affairs were, in the first instance, settled by by himself and Masipula, the King's principal councillor, and were then referred to Umpanda for his final sanction. This important arrangement was carried into effect in Zululand about a year after the arrival of Lieutenant-Governor Scott in the colony.

But in the mean time no authoritative recognition of Cetywayo as heir apparent to the chieftainship was made, and continually fresh instances were heard of in which acts of violence and oppression were committed, apparently more or less due to the suspicion and jealousy excited by the young chief's undeclared and precarious position. He was himself especially sensitive to all cases in which members of the tribe held communication with the natives in Natal; or in which Zulus of any class abandoned the tribe to settle in the colony; because he conceived that this implied some secret understanding with his brothers who were living under the protection of the English Government there, and who might, at any time, be set up as his rivals. For these reasons, and for some other considerations which were of similar tendency, the Natal government at length resolved to send a communication to the Zulu tribe which might put a final termination to this cause of distrust, and which might make their own real objects in the protection of the young Zulus, unmistakable and clear. In the year 1861, the Secretary for Native Affairs accordingly paid an official visit to Umpanda, and suggested to him that, as Cetywayo had been virtually accepted by the Zulu people as co-equal in authority

with himself, it should be publicly notified to the tribe, that he was now formally nominated as the future chieftain of the Zulus, with the acquiescence and support of the Natal authorities. Mr. Shepstone accordingly proceeded to Umpanda's chief place in the Zulu country, and having held private consultation with him and induced him to accede to the proposal of the government, a general assembly of the people was called. Cetywayo attended this meeting somewhat tardily and unwillingly, and when he came, brought with him a following of some 8000 young men who all carried short assegais concealed beneath their shields. Cetywayo was obviously doubtful of the good faith of the Natal government in the matter, and suspected that there was some ulterior design in this visit; this suspicion having been virtually strengthened because Mr. Shepstone purposely passed his place and declined to see him until after his interview with Umpanda.

After the object for which the meeting was called had been explained, some of Cetywayo's adherents in a tumultuous way requested that the friendly purpose of the Natal government should be practically shown by sending back the sons of Umpanda to Cetywayo. Mr. Shepstone answered that this could on no account be done, because it was a rule of action with the English never to abandon any one who looked to them for protection. The recognition of Cetywayo's succession was then formally announced, and the meeting dispersed, but with some noise and dissatisfaction on the part of the immediate attendants of Cetywayo, who still clamoured for the restoration of Usikota and Umkungu, and complained that messages had been conveyed from them to their sisters in Umpanda's kraal

by some of Mr. Shepstone's native servants. Cetywayo personally expressed his regret to Mr. Shepstone for the disrespectful bearing of his retainers upon this occasion, and thanked him for the service he had rendered him, but, in all probability, he none the less regretted the loss of this opportunity to regain possession of the persons of his brothers.

In the following year private information was communicated to the Natal government, intimating that some of Cetywayo's young men had been trained to ride on horseback, an accomplishment not hitherto possessed by the Zulus, and that a scheme was on foot to make a sudden raid into Natal, and during the confusion of the surprise consequent upon it to seize and carry off Usikota and Umkungu, whose place of residence was well known. This information was so circumstantial, and so well authenticated that the lads were immediately placed in the Military Camp for safeguard, and a body of armed Kaffirs with a company of regular soldiers, and some guns, were moved up to the frontier, and due precautions were taken to prevent any surprise. Nothing, however, came of this alarm; and Cetywayo protested that he knew nothing about the matter.

With these comparatively trifling exceptions Cetywayo, however, maintained altogether friendly relations with the Natal government, until Umpanda died in October, 1872; and shortly after the decease of the king, three messengers from Zululand formally reported the occurrence to the Natal government, and in the name of Cetywayo, Uhamu, Siwedu, and other surviving sons of Umpanda, and of the Zulu tribe, prayed that Mr. Shepstone might be sent to Zululand to instal

Cetywayo in the dead king's place. The messengers delivered this message at Pietermaritzburg on the 26th of February, 1873. They stated that 'the sons of the king and the head men of the tribe were mourning and cast down, and that the nation had suddenly found itself wandering, it knew not whither, because its guide was no more. The words of the king by which the nation had been guided, had ceased, and none but children were left. The people, therefore, wished that Somtseu (Mr. Shepstone), who was the father of the king's children, should go and arrange the family of the king, and breathe the spirit by which the nation should be governed.'

After due consideration of this request, and some further inquiry into the meaning and purpose of the tribe, it was decided by the Natal Government that the wish of the Zulu people should be acceded to. The principal reason which influenced the decision was the sense that if the government of Natal took part in the installation of the new king, all fear of any rival in Natal being set up in opposition to his authority would, thenceforth, be effectually dispelled, and that an *entente cordiale* between the Zulus and the English government would in this way be securely and permanently established, in the place of the suspicion and distrust which had recently prevailed. But in addition to this it was also hoped that as the officer performing the act of the installation was for the time endowed with the right to establish the principles upon which the new government was to be conducted, this might afford a very favourable opportunity to abolish the cruel, barbarous, and most evil practice of sacrificing many lives on the accession of a new king, and, perhaps, to

institute some other innovations in the spirit of the barbarian rule which might act advantageously upon its future character and tendency. On the 8th day of August, 1873, accordingly Mr. Shepstone crossed the frontier between Natal and Zululand with an escort of two field pieces, 110 mounted volunteer troops, and 300 natives. The expedition started almost immediately after the arrival of Sir Benjamin Pine as Lieutenant-Governor.

Mr. Shepstone and his escort penetrated for a distance of 100 miles quite into the heart of Zululand. He passed the Norwegian mission station of Ishowe, then crossed the Umlalazi river near its source, afterwards traversed the broad valley of the Umhatuze river covered with jungle, and then climbed a winding and narrow ridge of granite, which led over one of the highest points in the country, called Emtonganeni. The broad valley of the white Imfolozi, the cradle of Zulu power, was then stretched out before the expedition. On the 18th of August, they encamped in this valley, close above the royal kraal of Isirebe, which had been the dwelling place of Senzangakona, the father of Chaka, and they received there a welcome from an aged woman who was actually a surviving wife of Senzangakona. Within a few miles on the left, was the ruin of Dingaan's kraal, Umgungundhlovu, which had never been rebuilt since its destruction at the time of the Boers' final victory over the Zulus. Close on the right was the jungle-covered gorge of the Ipate into which the Boers had been decoyed in their previous advance when they had so gallantly fought their way out of the ambuscade. Immediately in front was the old burial ground of the Zulu chiefs, where no twig is ever allowed to be

touched, and where snakes and lizards are inviolable, because they are the depositaries of the spirits of the dead which crumble beneath. A salute of 17 guns was fired at this place to announce the arrival of the expedition. But Cetywayo and his train were still absent, as it now appeared, in consequence of the sudden and unanticipated death of Masipula, who had been for some time Umpanda's leading councillor. After the expedition had remained here four days, a request came that the place of meeting should be changed to a spot a little further on, beyond the Imfolozi river, because 'Isirebe' had proved unfortunate to both Chaka and Dingaan who had died violent deaths. This was agreed to, and the camp was advanced across the Imfolozi to a ridge close by the spot where Umpanda was buried. Cetywayo came to this place two days afterwards to pay his respects, and it was then arranged that the final act of the programme, the installation, should take place on the 1st of September. The intervening days were occupied by the Zulus in the performance of the traditional ceremony of 'Ukubazana' which consists in settling off all old scores of the past reign, a process that generally involved the removal out of the way of some too faithful servants of the late regime. On this occasion, however, the requirement of their English visitors that there should be no sacrifice of human life was scrupulously deferred to. On the first of September a military marquee was pitched in the centre of a large kraal about two miles away from the English camp, at a place called Umlambongwenya, in which sundry presents were arranged, amongst them a scarlet and gold mantle and head dress, intended to play the part

of Crown and coronation robes. The only portion of the ceremonial in which Cetywayo at all interfered was that he stipulated to be taken possession of, and in private so transformed that his people did not know him, and then in that changed form, to be returned to them. He was to be taken from the sight of Zulus as a minor and returned to them as a man; to be removed as a prince, and restored as a king. Mr. Shepstone's party advanced as a procession, with the band playing, into the kraal, and he himself with his staff, and Cetywayo with his councillors, were stationed in front of the marquee, the rest of the expedition being arranged at each side. 10,000 Zulus, mostly young men, were marshalled into a large circle 50 yards away. Mr. Shepstone then alluded to the object of his visit, and required the assent of the assembled people to each condition that he had predetermined as the base of his co-operation in the ceremonial. This having been unconditionally given, he proclaimed that, thenceforth, all indiscriminate bloodshed was to cease; that no Zulu should be condemned without open trial and right of appeal to the king; that no life should be taken, on any account, without the formal sanction of the king subsequent to such trial; and that minor punishments should be substituted for death in the case of trivial offences. Cetywayo after this went into the tent with Mr. Shepstone and his staff, with only one attendant, and was changed into the king by having his robes placed on him, and in this newly fledged state was presented to his brothers and councillors. Proclamation was next made of the new laws which had been inaugurated, and Mr. Shepstone assured the new made king that all the difficulties of his position would be certainly over-

come by moderation, prudence, and justice on his part, but that without the exercise of these qualities his difficulties would certainly overcome him. The marquee and its contents were then handed over to the king, as his coronation present, and the ceremonial was finished. The king gave some fine tusks of ivory and a herd of oxen as his parting present, and begged that it should be understood that this acknowledgment 'indicated the poverty of the country, rather than the measure of their obligation.'

The expedition commenced its return on September 3rd, and reached the capital of Natal on the 19th. Its passage through the Zulu country was greeted everywhere with expressions of satisfaction and gratitude. Groups of the natives collected in great numbers to see the visitors, and to express these feelings all along the route.

Cetywayo very shrewdly suggested during the discussions which were incidental to these proceedings, that the arrangement should include an offensive and defensive alliance, and that as the army of the Zulus belonged to the Natal Government, the quarrels of the Zulus should belong to them too. He obviously had his relations with the neighbouring Dutch republican States in his mind. Mr. Shepstone pointed out to him that the relation was not one of equality, but of subordination on the Zulu part; and that the Government would, as a matter of course, send for the Zulu army when it wanted it, but would necessarily have to judge for itself of anything that might take the form of quarrel. Mr. Shepstone found that Cetywayo and the principal men of the tribe had a rooted dislike to the operations of the missionaries, and wished that they

should all leave the country. The chief frankly admitted the value of 'teaching,' and said that if he thought he could remember what he learned he would be taught himself; but he wished that the work of the missionaries should be limited to teaching. He, however, finally agreed that the missionaries at present in the country should not be interfered with, that they should be assured against capricious expulsion, and that in any case where they were removed the full value of such property as they possessed should be secured to them. It was clear to Mr. Shepstone that the chief was quite incapable of conceiving any form of personal violence towards a missionary other than such as might be involved in his removal, with all his possessions, out of the land. Cetywayo objected at first to the establishment of rest-houses for Amatonga labourers passing through Zululand to work on the plantations in Natal, and his objection was manifestly based on the shrewd idea that such rest-houses might be made the small end of the wedge, and that the English occupation of Zululand might be finally established through them. He, however, readily agreed that huts should be provided for the accommodation of such travellers in his own Kaffir kraals, and that all such stations should be placed under the charge of Mr. John Dunn, an English settler who is well known to him, and who now holds confidential relations with him, although, oddly enough, he was one of the white settlers who fought on the side of Umbulazi at the battle of Dondukusaka.

The impression which Cetywayo made upon Mr. Shepstone during this interesting and very notable visit was, that he is immeasurably superior to any other

native chief he had ever come into communication with. He has a dignified bearing, and is unquestionably possessed of considerable ability and of much force of character. He was entirely frank and straightforward in all his personal communications. At one part of the interview, when some of the old men were fencing subtilly with an important point, he stopped them with the exclamation, 'Silence all of you. You are like the wind, which *says* nothing when it speaks, Don't you see what my father means? He means so and so;' putting down before them clearly and openly the exact point. He is naturally proud of the military traditions of his family, and especially so of the policy and deeds of his uncle Chaka. But Mr. Shepstone was convinced that he was already too old and too fat to aspire himself to military renown, and that he was quite sagacious enough to have formed a good mental grasp of the new circumstances by which he is surrounded, and to have become aware of the necessity of adjusting his own policy so as to meet them. His great difficulty has hitherto been that he has of necessity had to preserve the belief of his people that he is a worthy descendant of Chaka, at the very time that he has been shaping his course so as to satisfy the new conditions of affairs. This most probably is the true explanation of much of the shiftiness and reserve of the early portion of his career, and of his bearing in all that related to the protection of his kinsmen in Natal. It will be manifest that these remarks upon the personal history and character of Cetywayo have an important bearing upon the social conditions and prospects of Natal. Mr. Shepstone was, however, of opinion from his own personal observation and inquiry, that Zululand is now very

thinly inhabited in comparison with Natal, and that the increase of its population is very much more checked by its own marriage regulations than by any amount of departure of refugees from it to neighbouring States. If this be true, it is perfectly manifest that the Zulu tribe must be a materially less formidable power now than it was on the first arrival of the English settlers in the colony, and during the warlike reign of Dingaan.

But at the very time that the Secretary for Native Affairs was engaged with this expedition to Zululand, a series of events was also in progress that promises to exert a very material influence upon the management of the so rapidly increasing native population within the colony. From an early period of the civilised occupation of the land, a desire, in many cases amounting to a passion, arose among the natives to possess fire-arms. This was just one of the few advantages of the white man that did, unfortunately, exert a powerful attraction over the inert barbarian mind. In order to prevent the arming of the native population with guns, an Act was passed making it unlawful for anyone within the colony to possess fire-arms unless they were registered and stamped at the office of a magistrate; and only limited quantities of gunpowder were allowed to be supplied to persons requiring it for sporting purposes, or for other legitimate use. When, however, the Diamond Fields on the Vaal River had been brought into full activity, it was found that Kaffirs could be induced to work in the mines for guns who would not work for any other wage. Guns were, accordingly, recklessly used as a medium of payment for native labour at the Fields, and it soon became a common thing for a young

Kaffir at Natal to go up to the Vaal River and work for some unscrupulous employer until he had earned a gun, and then to return to Natal with his prize. Information from time to time reached the magistrates of certain portions of the colony, to the effect that guns were being surreptitiously and unlawfully introduced in this way. Amongst other tribes, one large one, known as the Amahlubi, which was residing in one of the reserved locations close under the base of the Drakenberg mountains, was particularly compromised. In some kraals unregistered guns were seen, and when the Government messengers endeavoured to take possession of them, in order to place them in the hands of the magistrate, they were carried off by force by the young men, in some instances loading them defiantly in the act, and under the avowed pretence that the guns belonged to Langalibalele, the chief of the tribe, and that they would be taken to him. These occurrences having been at last reported to the headquarters of the Government, and it having also come simultaneously to the knowledge of the authorities that overtures of some kind had been made from Langalibalele to chiefs living outside the colony to join him in resisting the Natal Government, the chief was summoned to appear and make explanations of his conduct, and of the turbulent behaviour of some of his tribe, first before the resident magistrate, and then before the Secretary for Native Affairs himself, at the seat of the Government. He made frivolous excuses in reply to both calls, and did not appear, and when messengers from the Government were again sent up to insist upon his obedience, he treated them with insolence and insult.

The tribe of the Amahlubi, which thus became involved in acts of disobedience and insubordination to the Government, was one of those which had originally belonged to Natal, but which had afterwards been conquered and absorbed by Chaka. It returned into the colony, however, after a prolonged residence in Zululand, in the year 1848, in consequence of some difference with Umpanda. The tribe then numbered 7,000, and its prayer to be allowed to settle in Natal as a protection from Umpanda was acceded to by Lieutenant-Governor West. Langalibalele brought with him, under this permission, 8,000 head of cattle. The tribe at first settled down at a place called Emhlwanini; but as it was afterwards found that the Dutch farmers had some kind of claim to the land there, Langalibalele was removed, somewhat unwillingly on his own part, to the sources of the Bushman's River, close under the Drakenberg, where land was apportioned to him, and where he was required to protect the settled parts of the colony in that direction from petty thefts by some small parties of Bushmen, who lurked in the caves of the mountains, and were occasionally troublesome.

From the time of his first arrival in Natal, although he came seeking for protection, Langalibalele was marked by an independent bearing, and an imperfect recognition of the subordination which his position as a refugee in the land required. When ordered to remove to the Bushman's River, he did not do so until the Lieutenant-Governor went up to Emhlwanini prepared to enforce his command; and he was always known to the resident magistrate as of sluggish and doubtful obedience; one reason for this independence

of bearing was that he had a somewhat distinguished and valuable reputation to preserve. He was reported amongst the Kaffirs to be a potent sorcerer who could rule the clouds; and it was very largely believed that he could make rain, or stop rain, at his will, and that therefore the fertility of the ground, and the abundance of the harvest, was in his hands. Cetywayo has asked for the old rain-maker from the Natal Government on more than one occasion, that he might have him at hand to turn to account whenever there was an exceptionally dry season.

Langalibalele's last serious act of contumacy in the matter of the guns occurred just when the expedition was on the point of starting for Zululand; a message was therefore sent to him to say that he would have to render an account of his conduct as soon as the Secretary for Native Affairs returned from the arrangement of the Zulu accession.

Mr. Shepstone was back in Natal from Zululand on September 19. On October 4, messengers were for the third time sent up to Langalibalele requiring his presence, and coupled with an intimation that if he did not come this time he would be brought down by force. In accordance with this intimation 5,000 armed natives with some troops of mounted volunteers, 137 of the 75th regiment of infantry, and two guns were sent up to Langalibalele's place at the end of October, under the immediate personal control and command of the Lieutenant-Governor and the Secretary for Native Affairs.

Langalibalele, who had taken his own measures to ascertain what was passing in the lower districts of the colony, went over a pass of the Drakenberg which

is known as the Bushman's River pass, with a small party of his immediate attendants, a few hours before the Government party could reach his location, and he left instructions that the young men were to follow him with the cattle, but that the old men, women, and children were to remain in the kraals of the tribe. His object appears to have been to place his cattle in the hands of the Basutos, to prevent their being seized by the Government, and he had previously sent messages to Molapo, a chief of the Basutos, to ask him to take charge of the cattle as he was going to offer an armed resistance to the Natal Government.

Langalibalele's instructions were closely obeyed, and on the day following his own departure over the mountain frontier, his cattle were in process of being driven up the pass into Basutoland. It so happened, however, that that mode of escape had been foreseen by the Natal Government, and a small party of mounted volunteers, with some Basuto attendants, had been sent up another less frequented pass, known as the Giant's Castle pass, to stop the passage of the Bushman's River pass at the top. When the volunteers, after a very difficult and fatiguing ride from the Giant's Castle pass, along the upper and inner side of the mountains, arrived at the top of the Bushman's river pass, they found the whole defile filled with cattle, and armed men driving them. Major Durnford, of the Royal Engineers, who was in command of this party, called upon the Kaffirs to stop, and attempted to bar the way by drawing a line of his men across the top of the ascent. Langalibalele's men, under the guidance of an Induna of the tribe, named Mabuhle, neverthe-

less pressed on, and being in very much larger force than the mounted volunteers, these were directed to retire before them. As soon however as they commenced their retreat, Mabuhle's party began to fire upon them, taking up their own positions skilfully behind sheltering masses of rock as they did so, and three white men, of whom one was a son of the Colonial Secretary, and two of their attendant natives, fell. The small party of volunteers then retired out of fire, and the cattle and their drivers continued their flight, and ultimately joined Langalibalele in Basutoland, some 150 miles beyond the frontier.

The Colonial authorities in the meantime proceeded to carry into effect the other part of the plan which they had arranged for the breaking up of the refractory tribe. They came up in force to the boundary of the location, and sent notice into it that in three days the entire district would be occupied by the Government, and that all natives found in it with arms in their hands at the end of that time would be treated as rebels and enemies. At the end of the three days of grace the Government forces, consisting of the loyal natives and of mounted volunteers, swept through the location quite to the base of the mountains, burning down the huts, and encountering small bands of armed men, who attempted resistance here and there When they reached the rugged ground at the bottom of the Drakenberg, they found that the women and children of the tribe had been placed in caves and natural fastnesses, and were guarded there by a small remnant of the men left behind for the purpose, and it was rumoured that all the young men were to return to these retreats when the cattle had been placed in safety

in Basutoland. It was on this account manifest that these lurking places and strongholds must be cleared out at once; and this was accordingly done, and the women and children were taken from them and sent down into the colony for safeguard. During this proceeding the Government party were fired upon from the caves, and in some isolated instances a stubborn resistance was made by infatuated savages, which led to some acts of strong and stern retribution before the responsible leaders of the Government party could be aware of what was occurring. But with this exception the operations were effected with as much consideration for the unfortunate tribe which had thus become involved in the consequences of armed rebellion as was practicable under the circumstances. Some loss of life was incurred amongst the natives on both sides, but the impression upon the authorities, who were most anxious to carry out the stronghanded proceedings which had become unavoidable with gentleness and forbearance, was that as little violence had been used as could be expected where such impulsive and imperfectly disciplined agents as native troops had to be employed. The Secretary for Native Affairs, who is well known as one of the most steady and consistent advocates of the best interests of the natives, and who was present with the Kaffir contingent during the performance of this difficult service, affirms unreservedly that in every case such acts of stronghanded violence as occurred were due to the culpable and fierce resistance of those who were its objects, and who well knew what must be the penalty of their resistance to the authority of the law; and that the instances in which the agents of the Government were betrayed by hot blood into un-

justifiable violence were surprisingly few considering the circumstances which had to be dealt with. At any rate the orders of the Government were promptly and efficiently carried out, and the authority of the Government was effectually vindicated in the eyes of the native tribes.

A strong party of the Colonial forces had in the meantime followed Langalibalele and his cattle into Basutoland, and simultaneously with its advance an armed force of the mounted police from the Cape Colony was sent into Basutoland to intercept the fugitives' retreat in that direction, and to prevent the Basutos, who had now become virtually tributaries of the Government, from committing themselves by showing him countenance. Letsie, the chief son of Moshesh, the well-known Basuto chieftain of past troubles, was a perfectly safe ally of the authorities, but some doubts were entertained of the loyalty of his younger brother Molapo, as it was perfectly clear there had been some understanding between him and Langalibalele, and that Langalibalele had been directing his retreat towards Molapo's residence in the Leribe district. When however Mr. Griffith, the representative of the Cape Government in Basutoland, appeared with a strong detachment of the mounted police, Molapo made a virtue of necessity, and undertook to assist in the capture of the fugitive. Mr. Griffith accordingly came upon him with fifty men of the police force just as he arrived with eighty-four of his tribe armed with assegais, at Molapo's village, disarmed them and arrested the chief, his five sons, his brother, and three of his chief men. 7,000 of his cattle were found near, which were all seized by the Basutos. The main body of the

fugitive tribe were a little distance off, at the base of the Maluti mountains. Mr. Griffith proceeded at once to demand their surrender. Two hundred of them gave themselves up, but another portion of this party took up a strong position in a narrow gorge of the mountains and fired upon the police, and were at once routed and dispersed, with the loss of ten of their men. On the following day, which was December 13, the pursuing party of 1,500 Natal Kaffirs and eighty volunteers, under Captain Allison, arrived at Leribe, and the prisoners, with 5,000 of the cattle, were given up to him; 2,000 of the cattle being awarded to the Basutos for the service they had rendered in their apprehension. It had now been further ascertained that the fugitive chief's ultimate intention was to have made his way from Molapo's place down the St. John's river to join his brother residing there near the powerful and independent tribe of the Amampondas, who it was conceived might be induced to afford him protection.

When Langalibalele was seized at Leribe, the headman, Mabuhle, who had led the resistance at the Bushman's River pass, was with him, and was obviously enjoying his confidence and taking a prominent part in the conduct of the escape. It was afterwards ascertained that Mabuhle had joined Langalibalele immediately after the conflict at the pass, boasting to him that he had killed the first white man who had fallen, and that he had continued to act for Langalibalele from that time until the arrival of the mounted police. Mabuhle was taken with the other prisoners and was put into handcuffs, but he managed in some way to effect his escape during the night, and has not been since heard of. It is quite manifest that he was

LANGALIBALELE,
CHIEF OF THE AMAHLUBI KAFFIRS, p. 269.
L. Reeve & Co., London.

one of the most active and responsible agents in the act of rebellion, and most probably he was the most dangerous adviser the old chief had near to him. Mabuhle, however clearly manifested courage, capacity, and resolution in the bad cause to which he had committed his chief.

Captain Allison returned to Natal safely with his prisoners, and Langalibalele, his sons, and the chief men of the tribe most compromised were arraigned for high treason and rebellion, and a special court was constituted for their trial, consisting of the Lieutenant-Governor as supreme chief, his executive council, some of the resident magistrates, and six native Natal chiefs of equal standing with Langalibalele himself. The trial was conducted according to the form and principles of native law, which has been retained in force in the colony for purposes of convenience; that is to say, the crime was held to be primarily one of rebellion against the supreme chief, who by tradition, custom, and the acceptance and confirmation of the British authorities on settling the Government of the colony, is held to have an unquestionable claim to the obedience, service, and property of all subordinate chiefs and tribes living under his supremacy and rule. Several other men of the tribe who had been compromised in the acts of the chief in various ways, and who were taken in attitudes of resistance within the colony, were subsequently also tried in the same form. Twenty-three only of the accused were found to have insufficient evidence against them for their conviction. The guilt of the rest was taken to be amply proved, and sentences of varying degrees of severity were pronounced against them. Langalibalele himself was held

to have incurred the penalty of death, but was sentenced to banishment, or transportation, for life, which, of course, involved deposition from his office and confiscation of all his property. One of his sons, Malambuli, who was proved to have fired on the servants of the Government, was also transported for five years. Six other sons, and above 200 of the tribe, were sentenced to imprisonment with hard labour for terms varying from 20 years to two years; but it was understood that a considerable portion of these should be allowed to serve out their term of punishment as servants in the colony, being merely scattered about so as to favour the breaking up of the tribe as a connected community. Arrangements were then made with the Cape Government to allow the imprisonment of the chief himself, and of one son, for the terms of their sentences, in Robben Island lying off Table Bay, which is the penal settlement of the old colony, and the chief and his son were sent to Robben Island for this purpose on August 4, 1874.

In the meantime an appeal was made against the sentence of the chief by the Bishop of Natal, to the Executive Council of the colony, on various points which were set out in detail, and argued by the Bishop on his behalf; and this appeal being rejected, and an application to the Supreme Court for an interdict to prevent the Governor from carrying out the sentence against the chief having also been refused, the entire circumstances of the case were brought under the notice of the Secretary of State for the Colonies by a printed statement prepared by the Bishop, and also by personal explanations submitted by the Bishop in an interview.

The view taken by the Bishop in pressing this appeal and protest substantially was that Langalibalele was not a conspirator; that there was no satisfactory evidence of his having entered into treasonable engagements with other chiefs, or of his having intended himself to make any armed resistance to the Government, but that he was simply a victim of the turbulent spirit of his young men, who had a harmless and boyish ambition to possess themselves of guns; and that when alarmed at the summons of the Government he had merely desired to get out of the way until the trouble had blown over, that he might subsequently make terms for his submission and return; and that the struggle at the pass was an unpremeditated and unfortunate incident of the escape, due to the eagerness of the young men to save the cattle, and to the indiscreet and ill-considered attempts at arrest on the part of the Government The circumstances which chiefly weighed with the Government, and with the colonists at large, in rendering them unable to adopt this lenient view of the case were, that the Government authorities at Cape Town were quite aware that overtures had been made by Langalibalele to Molapo, the brother of the principal chief of the Basutos, to assist him in resisting the Natal Government, and that these overtures had been favourably received; that the chief had allowed himself to be prevented, upon several occasions, from obeying the duly delivered summons of the Government to account for his conduct, by four of his chief men of well-known turbulent disposition, of whom one was Mabuhle the Induna, who led the retreat at the Bushman's River pass, and who fired the first fatal shot upon the colonial troops; that this same Mabuhle was

allowed to continue in a position of responsible command, and to conduct the further operations of the retreat after he had told the chief of the armed resistance at the pass, and after he had boasted of his own prowess in killing the first white man; that his disobedience to the call of the Government was deliberate, repeated, continued, and simultaneous with the surreptitious and illegal arming of his young men with guns; and, finally, that the hasty and defiant removal of the cattle was, in accordance with the custom of native tribes, an unmistakable indication of hostile purpose, and that the men effecting this removal took their position deliberately and systematically behind rocks, and shot down white men who had refrained from firing upon them.

Upon a careful review of all the circumstances of the case as they had been placed before him, the Right Honourable Her Majesty's Secretary of State for the Colonies concluded that the recusant chief had most justly deserved to be punished for refusing to obey the summons and the lawful commands of the Natal Government, and for attempting to remove himself from the jurisdiction of that Government with his tribe and his cattle; but he thought that it was not absolutely clear whether the offence was due to a deliberate scheme of concerted resistance, or whether it was simply the effect of unfounded fear and panic. He was also of opinion that it was unfortunate that counsel had not been provided for the chief when on his trial, and that his own plea had not, under the circumstances, been taken as one of justification, or extenuation, rather than as one of unconditional admission of guilt. He further conceived that there was some confusion and awkward-

ness in the proceedings which had been adopted, as the criminal was tried by native law, because some part of the offence alleged was not criminal in the view of civilised law, and as charges were nevertheless introduced into the indictment which were cognisable by the ordinary law courts; and he held that the evidence of the witness who testified to his defiant insolence when the summons of the Government was delivered to him, ought to have been supported by the corroborative testimony of other witnesses. Lord Carnarvon on these several grounds finally recommended to Her Majesty the remission of that part of the sentence which contemplated imprisonment in Robben Island, and arranged with the Cape Government for Langalibalele's residence under the surveillance of the police upon a suitable spot on the main land of the old colony, confirming that part of the sentence which involved banishment from Natal. He also advised that due care should be taken to give the members of the broken up tribe a good start in life in their scattered and untribed condition, and that the tribal disruption should not be extended to any other tribe, as for instance to that of Putini, which had compromised itself by sheltering the cattle, or giving other countenance to the rebellious chief.

The most important, however, of the consequences of these incidents was that Lord Carnarvon sent Sir Garnet Wolseley out to Natal, as temporary administrator of the government, with a commission to inquire exhaustively and thoroughly into the condition of the colony in the matter of its relations to the large native population which has so rapidly grown up within its precincts, and soon afterwards suggested a general consideration of their position in regard to the native

tribes by all the civilised colonies and states of South Africa, with a view to determine whether some organised plan of confederation, providing for mutual assistance and support, might not be agreed upon. His lordship also transmitted to Natal by Sir Garnet a further recommendation that, in the face of a re-examination of the whole question of the tribal government and localisation of the natives within the colony which would have to be made, the legislative council should be strengthened by the addition to its ranks of a larger number of members, who, on the ground of their having to represent the interests of a section of the community so numerous as the natives, should be appointed by the Government. This arrangement was accepted by the legislative council of the colony so far as to agree that eight members, nominated by the Government, should be added to the legislative council, previously consisting of 15 elected and 5 official members; and a Bill was passed through the assembly providing for this important change in the constitution during the year 1875.

Sir Garnet Wolseley's work of observation and inquiry having been completed, he has been succeeded in the Government by Sir Henry Ernest Bulwer, who assumed the functions of governor in the beginning of September last, 1875, and to whom will fall the difficult but most interesting and important task of completing the reorganisation of native rule within the colony, and of determining how best the two isolated masses of the rapidly multiplying Kaffirs can be brought within the influences of advancing civilisation. The forces which the Lieutenant-Governor has at his command for maintaining order, and for effecting the defence of the colony at the present time, are one wing of a

regiment of infantry, a small detachment of the Royal Artillery and Royal Engineers, 400 mounted volunteers, and 850 foot volunteers, rifles, and artillery. Beyond this, reliance is placed upon the loyal natives of the colony, who are called up, armed with their native assegais, and mobilised by the magistrates, whenever their services are required, and upon reinforcements from head-quarters at Cape Town in case of need.

CHAPTER VIII.

SOCIAL PROGRESS AND PROSPECTS.

THE white population of Natal, amounting to 17,000 individuals at the present time, is principally made up of English settlers who have arrived in the colony since 1847, and of the children of those settlers born within the colony. But there are still some of the original Dutch pioneers, who so gallantly fought the first battle with the savage tribes, and of their descendants, although very many of these sooner or later withdrew from the British territory to the independent states, beyond the mountains, on account of the more congenial and less constrained mode of life that is still open to them there.

The Dutch farmers are principally found in the inland districts, comprised within the counties of Klip River and Weenen which occupy the basin of the upper affluents of the Tugela, and of the Umvoti which lies around the sources and upper streams of the river of the same name. They still hold the large farms which they acquired from their first occupation of the land, and they still dwell upon these homesteads in the same primitive and semi-patriarchal way. They are, for the most part, self-contained, self-reliant men; but they are phlegmatic, unprogressive,

and rude. In many instances they have large families. They dwell in roomy, well-built houses, constructed either by their own or by their children's hands; and their chief occupation is looking after the large herds of cattle, the horses, and the sheep that roam over the wide and unenclosed pastures. They plant the orange and the peach-tree round their houses, and fence in a small patch of land for the cultivation of the vegetables and grain that are needed for the support of their own families. Their wealth mainly consists in their live stock and in their land and homesteads. They ride and shoot well, have a sound judgment in the selection of suitable pasture, a keen eye for animal life, and especially for game, and an admirable skill in getting the waggon with its long team of yoked-in oxen through the barely tracked wastes of the wilderness; but they trouble their heads little about the improvements of agriculture or the applications of science. Upon the whole, they prefer that the earth should be flat rather than round, and they scarcely desire education for their children beyond the narrow measure that is necessary to prepare them for the ritual observances of their Church. The Dutch boer everywhere accords a free hospitality to visitors, and is a pleasant, amusing, and in many points instructive acquaintance to those who take him in his own vein.

The standard farm of the Dutch boer is 6,000 acres in extent; that is to say, it comprises something more than nine square miles of land, and, wherever this has been practicable, it consists of high hill-pastures for the summer, and sheltered valley-pastures for the winter. Where the Dutch districts of the colony are well filled up, each man therefore nevertheless lives

some three miles away from his neighbour. His boundaries are marked by simple cairns of stone erected in conspicuous stations, and by the lines which can be traced between these. What therefore meets the eye in these parts of the colony is broad swelling pasture unbroken by a fence, traversed only by rude waggon tracks scored into the sod by wheels and hoofs, but dotted here and there by cattle, horses, and sheep. The houses, backed by clumps of fruit trees and flanked by enclosed patches of cultivated ground, are in these districts several miles apart. In the very admirable survey-map of the colony, just issued by Mr. Stanford, the larger part of the ground is seen to be divided in triangles and polygons of endless diversity of proportion and form, by lines that run mesh-like in all directions. These polygonal meshed spaces are the original 6,000 acre holdings of the earliest settlers.

In other divisions of the colony, where the 'up-country' English farmer has taken hold of the land, the general aspect is pretty much the same. There are the same broad, open, unfenced pastures, but as a rule the houses are closer together, and the cultivated enclosures are larger. Clumps of the blue gum-tree of Australia (*Eucalyptus globulus*), which is now naturalised in the colony, and which grows with incredible rapidity and facility, also pleasantly mark the positions of the homesteads in the wide landscape. These noble trees, in still air and when the distance is so great that their large size is not immediately appreciated, look very much like the cypresses of Eastern Europe, but in a brisk breeze they sway gracefully before the wind like dark green tree-feathers. The naturalised blue gum of Natal not uncommonly stands 120 feet high

when it is twelve years old. The houses and farm buildings of the settlers are often merely rude structures of wattle and daub, with broad-eaved thatched roofs; but in thriving homesteads these primitive erections gradually get superseded, and replaced by more durable structures of burnt or sun-dried bricks, made out of the subsoil of the farm.

The staple grain-crop of every settler's home with which he first concerns himself, is the Indian corn, or maize, which grows everywhere throughout the colony, from the mountain tops to the sea. This inestimable grain constitutes the chief part of the food of the large native population of the land, and enters also materially into the daily fare of the white settler's family as well. Its productiveness is very great; a single grain produces a cob with from 700 to 1,000 grains. The plant requires only the rudest cultivation, but it grows best in deep soils, near streams of water. The average yield of this cereal is from 24 to 36 bushels per acre, and the value of the grain in the market is from 2*s*. 6*d*. to 5*s*. or 6*s*. the bushel.

Small patches of wheat are grown in most homesteads, at least to the extent that serves for the supply of bread to the family; but wheat is not a favourite crop amongst farmers in general on account of its liability to rust and mildew in the ordinary season of harvest, which occurs in the wet months. It is, however, a notable and really important fact that wheat ripens in the dry winter of Natal under a skilful system of irrigation, and that two crops of it may be grown in the year. There is a peculiar kind of wheat, which is a great favourite with the Dutch farmer, that is known as klein-corn. This variety is very hardy, and

makes excellent, so called, boer's meal bread; but the grain is difficult to thrash on account of the tenacity with which it is held by the husk. It is for the most part 'trodden out' by oxen. Oats grow much more readily than wheat, but they are mostly consumed in the form of green forage. Barley thrives in some districts, and is employed as horse food. It is not yet malted in the colony. Kaffir corn, which is a species of millet produced largely by the natives for brewing their 'tchualla' or native beer, is naturalised everywhere, and is used as horse-food in some places.

The sweet potato, the tuber of the *Convolvulus batata*, is amongst root crops what maize is amongst grain. It grows everywhere, from the hills to the sea, with the utmost readiness and with the most marvellous luxuriance, and it is very largely employed as a food. It is a much larger tuber than the ordinary potato, and is sweet when boiled. Its English analogue, the true potato, however, also grows very well in the midland and hill districts of the colony, and yields two crops in the year under skilful management. But it needs careful cultivation. The sweet potato is so much more hardy and easy to manage, that it sells in the market for almost half the price of the ordinary potato. Turnips and beet-root thrive well in suitable hill situations; the sugar-beet in some rich valley soils attains to an enormous size. Some plants grown in the Moor River district in 1866 as an experiment, weighed 80lbs. apiece. Clover and lucerne can both be turned to good account as artificial food in the uplands.

The natural pastures of the colony are formed of a considerable number of grasses, which vary much in their quality and excellence, and which tend in many

situations to grow into a quite unwieldy luxuriance and coarseness. The old Dutch settlers distributed the natural pastures into two distinct classes accordingly as the grasses were what they termed sour or sweet. The distinction is, however, very indefinite and vague, and is perhaps best explained by the statement that 'sour' grass is characterised by the more or less abundant presence of sedges and of plants that have a tendency to associate themselves with sedges, and that 'sweet' grass is characterised by the entire absence of sedges and their allies. The old colonists secure a constant succession of tender young grass for pasturing their live stock, by continually burning the grass in large patches as soon as it gets dry and unduly coarse. This leads to the 'grass fires' which are regular and frequent accompaniments of the 'dry season' throughout the colony, and which occasionally, under bad management or accidentally adverse conditions, become dangerous and destructive conflagrations. The traveller in a moonless night may all at once, from some hill-top or ridge, see before him on the lower ground, what looks not unlike a large city brilliantly lit up by gas, the lines of fire quite simulating the appearance of regularly constructed streets. On hill-sides mimic volcanoes are represented when the line of flame sweeps down from the hill-top along the flanks of the protuberant ground. The flame under such circumstances from a distance has the aspect of a stream of bright incandescent lava flowing down a volcanic cone. The city of Pietermaritzburg is so surrounded by lofty hills that this volcano-like effect may continually be watched from it night after night upon the grandest scale. When the wind blows strongly during a grass fire, the line of

fire advances over the pasture at a rapid rate, occasionally even faster than a horse can travel, and when the fire comes upon tufts of tall coarse grass, like the aromatic Tambooti grass, which grows six and seven feet high, the flames leap up twelve and fourteen feet, and roar and crackle so that their sound can be heard even miles away. It is generally under such circumstances that serious damage is produced in consequence of the flames rushing suddenly down upon some unprepared homestead, and seizing upon its inflammable timber and thatch. The proper defence is to burn the grass down *away from the building*, and gradually, when there is no wind, and when the progress can be controlled, so that on the arrival of any grass fire from without, it finds a broad bare space where no combustible is left on the ground to carry its ravages into the settler's citadel and home. Even when a fire is seen advancing over the distant veldt, this defence may be successfully practised, and the flames be met by counterflames while they are yet yards away from the homestead, and at an altogether safe and respectful distance. When a grass fire is burning gently and steadily in the veldt, horses and oxen can be driven through the flames with entire impunity. But this of course cannot be done when the fire is fanned into fury; and there is unfortunately always a tendency in a large grass fire to 'raise the wind,' and constitute its own blast. During daylight the grass fires on the hill-sides and plains are characterised by soft clouds of smoke rising here and there over the landscape, and sometimes blending themselves with the gathering mists and murkiness of the coming storm. Great numbers of birds may be seen at such times, circling round and

round and hovering about the borders of the smoke, on a watch for grasshoppers, locusts, mice, and other unfortunate fugitives driven out abruptly from their usual haunts in the pasture by the flames. Immediately after a grass fire the ground is black with the charred remnants of the dry vegetation. After a few hours the black becomes russet,—the sable tint is exchanged for a reddish rusty-brown. The 'russet' then waxes soft and velvety with the dawn of the new verdure, and as the little green points of young grass shoot up through the charred ashes, the velvet dyes itself with a rich deep olive, and the olive then brightens day by day, until it assumes the brilliancy of the emerald. At the same time that this transformation is being brought about, gay flowers begin to present their bright hues in the midst of the pile of the olive and emerald carpet. The first to appear are small jonquil-like blossoms scattered as spangles in the rising verdure; then white daisy-like flowers open their eyes, and the flame-lily comes as a floral echo of the flames of the recent conflagration. Within a few weeks the dreary black expanse is changed to a close-shaven, tidy lawn, with a few scattered groups of well-ordered shrubs here and there, and with, occasionally trees rising above the shrubs, where either an environment of rock or a superabundance of moisture has afforded protection from the fire, and with circular tufts of sweet-scented lupins, or of rich metallic blue cyclomenas, or of pink and crimson wild indigo, or of yet more varied and graceful blossoms, enlivening the deepening sward.

When the first Dutch settlers came down into Natal through the passes of the Drakenberg they brought with them large herds of oxen and cows, and spread these broadcast over the luxuriantly clad hills amongst

the buffaloes and antelopes, and these herds, left almost entirely to the natural pastures, multiplied so rapidly that most of their owners became wealthy merely from the increase of their cattle and the product of their dairies. The abundant oxen of the natives have been alluded to in various passages of their history as yielding the booty which excited the cupidity of the predatory and aggressive tribes, and as having been drawn upon, on various occasions, for purposes of subsidy or fine, as in the notable case in which Umpanda paid the boers a subsidy of 36,000 head of cattle for his recognition as the successor of Dingaan. It is, therefore, unquestionable that horned cattle are, so to speak, a natural production of the upland districts of the colony.

The cattle of Natal are principally furnished from three distinct varieties: 1. The Africander; 2. The Zulu; and 3. The Fatherland, breed. The 'Africander' ox is a descendant from cattle possessed for an unknown time by the Hottentot race. It has a light body, with long legs and enormously wide horns. It is valued for its qualities as a draft animal, as it travels comparatively quickly with reasonably light loads; but it is not much prized for either meat or milk. The 'Zulu' ox is native to the districts inhabited by the Zulu tribes; that is, primarily and mainly to the region that lies on the seaward side of the Drakenberg Mountains. It is a small, light, and active animal, furnishing excellent meat, rendering good service, up to its stature and strength, as a draft animal, and is very hardy. It is the only ox that can be trusted to stand work in the climate of the low coast districts; and it is essentially the great foundation of the Kaffir's wealth. The 'Father

land' ox is a descendant of cattle that were brought into Africa, from their European home, by the Dutch. He has the full heavy body, the small horns, and the meat and milk producing powers that make him of the highest value to the grazier. He also is very powerful as an animal for draft, but does not bear long journeys, or exposure and privation. He weighs, when fat, about 1,000 pounds, and he therefore requires a liberal diet. The Zulu ox in the same circumstances does not weigh more than 400 pounds. The Africander and Zulu yield a mixed breed which is known as the 'Bastard Zulu,' and which is the greatest favourite of all for travelling and draft.

The estimate of the number of horned cattle to Natal, in the year 1873, was 111,000 belonging in white colonists, and 357,000 belonging to the natives.

If, however, the early experience of the Dutch farmers, or even that of the aboriginal tribes, with their cattle, had been maintained up to this time, the report would have concerned numbers enormously larger than this. Such was not the case, for the reason that in the year 1855 an epidemic sickness of the nature of pleuro-pneumonia broke out amongst the cattle, and gradually travelled through all parts of the colony. The disease was of a very virulent form when it first appeared, and scarcely four per cent. of the cattle seemed capable of resisting the infection where it came. The price of draft oxen, which had been as low as 3*l*., quickly rose to 10*l*., and in many places draft oxen, so indispensable for heavy transport, became actually scarce. This induced the Dutch farmers to endeavour to have a second string to their bow. When they first came down into Natal they had with them

about 20,000 woolled sheep, but under the treatment which they received at first these animals quickly died away, and it was only when the boers began to experience the ravages of the fatal epidemic among their cattle, that sheep once more appeared upon their farms, being brought down again from the Free States and other high regions of the interior. Since that time considerable attention has been given to the improvement of the breed, and to the study of the conditions that are most favourable to its multiplication and healthy existence, and the result is that mutton is now as common as beef on the tables of the settlers, and that wool is an increasing staple of export. It was estimated that there were 289,000 wool-bearing sheep in the colony in the year 1873, besides numerous Natal flocks that were grazing in the Free State at the time of the return on account of its being the season of summer, when the Natal grass is most coarse. The great difficulty which has to be encountered in the management of sheep seems to be that in the natural circumstances of the country they are subject to danger from starvation at one period of the year, and from repletion at the opposite season, and that this risk has to be met by judicious handling and artificial restrictions and expedients. Small flocks seem more adapted to the conditions of the land than large ones. It is generally considered that the annual increase of sheep on well-managed, healthy farms is not less than 33 per cent., notwithstanding various drawbacks that affect them as live stock.

It is somewhat remarkable that the natives have a sheep of their own, but it is a comparatively small and somewhat delicate animal, and defies all attempts to

improve its breed. The Kaffir sheep is a curious, ugly creature, with a quantity of dark brown hair mingled in with its scanty wool. It weighs from 50 to 60 pounds, yields excellent mutton, and has a fat tail. It has been considered by some authorities as being most probably a cross between the sheep and the goat, and by others as being a modified form of the Siberian goat, or mouflon (*Caprovis musimon*). The Kaffirs also have numerous flocks of goats, which they value exceedingly. The number of hairy fleeced sheep possessed by the natives in Natal in 1873 was estimated at 54,000, and the number of their goats at 153,000.

It has been found by some enterprising settlers in the higher districts of the colony that the Angora goat thrives well on many farms that are not satisfactory for sheep. The animal yields good meat, furnishes a skin that is more valuable than sheep-skin, and supplies a clip of hair that is worth 2*s.* 6*d.* a pound in England. It is also more hardy than the sheep, and requires scarcely any care beyond keeping it from breeding more than once in the year. In 1873 there were between 19,000 and 20,000 Angora goats in the colony.

Horses have been from the first a favourite and fairly successful stock with the old Dutch colonists. Many of them had large troops. But it is only recently that much care has been given to improve the breed. Horses in Natal are liable to attacks of epidemic sickness which are occasionally very fatal. This is especially the case on the low-lying districts of the coast. On the other hand, there are some hill-districts in which horses, with fair care, do very well indeed. The number of horses in 1873 in Natal was

returned at 12,000 belonging to white settlers, and between 7,000 and 8,000 belonging to natives.

There is one general remark which seems to apply with almost equal force to all kinds of live stock in Natal. Successful and profitable management of it requires that artificial food should be provided during one period of the year. This may be readily managed by a judicious alternation of crushed Indian corn and sliced root crops. In regard to cattle it has been actually found that nothing produces flesh and milk more quickly than maize. Under judicious arrangements this food is quite calculated to take the place of the oil-cake of the stall-feeder at home. The plan which has been found most successful with milch cows is to feed them in the stalls with crushed maize when they are brought home in the evening, then to milk them, and afterwards to feed them again with cut roots. In the morning they are once more fed with crushed maize, milked, and then turned out on the pasture.

The general condition to be aimed at by English farmers in the colony seems to be to form homesteads upon which all the leading necessaries of the family are in the first instance provided, and in which afterwards as many sources of return as possible are developed, to add supplementary contributions to the income. It is a suggestive fact, and one that very largely illustrates the circumstances of the farming settler's life, that in a recent year, when 24,388 acres of land were under crops and in European occupation, in the midland and upland districts of the colony, it was found that only 279 of these acres were concerned in the realisation of produce which was capable of export, and that the value of the exportable produce from these

acres did not exceed 2,316*l.* This, of course, is irrespective of the wool grown upon the uncultivated pastures. In the neighbourhood of the town settlements very small farms have been found in some instances to yield remunerative returns, on account of the facilities then afforded for the disposal of marketable productions. Thus, in the neighbourhood of Pietermaritzburg, notwithstanding the readiness with which land can be acquired, it has rarely happened that more than 150 acres are cultivated by one occupier. Previously to the year 1865, before the commercial crisis of that period had affected the fortunes and habits of the citizens, and when every man had his riding-horse, if not his riding *horses*, oat hay alone yielded a large and certain return upon these suburban farms, in some instances amounting to as much as 15*l.* per acre. Butter, cheese, bacon, and butcher's meat in such circumstances can also be turned to ready account. On remote farms butter and wool, on the other hand, have remained almost the only produce that is capable of transport in the conditions of the colony. It still continues to be a pressing and very interesting problem, how best some additional remunerative industries may be found for up-country settlers who are far away from the advantages of ready markets. The opening out of more easy and cheap means of inter-communication and transport, as a matter of course, will materially assist in furnishing a satisfactory solution of this difficulty.

In Pietermaritzburg itself there is a large open piece of ground, or square, reserved for the purposes of the sale of produce, with a market-house, in front of which the wagons of the farmers may be drawn up. A market bell is here rung at nine every morning, and

farm produce and trade articles, consisting of wool, skins, corn, maize, poultry, butter, salt meat, fruit, vegetables, firewood, ivory, and ostrich feathers, are disposed of by auction; the scene being generally a very lively one, as the market-house constitutes a kind of exchange and lounge for the citizens, who come to look on and chat with their friends, as well as to buy. On the Saturday more general sales follow the ordinary mart of the day, and rival auctioneers dispose unreservedly of all kinds of articles arranged upon planks and tressel-supported tables spread under the shade of syringa trees, which in spring are covered with huge bunches of feathery, lilac-like, heavily scented flowers. Oxen, horses, wagons, carts, and even farm-houses and farms are submitted to the arbitrament of the hammer on these occasions. The writer remembers one instance of a gentleman, who was rather weak on the point of auctions, having sauntered in at a time when a lively bid of two shillings, for some unknown thing, had just been made, and feeling himself unable to resist the natural impulse of his disposition where such a trifle as two shillings was concerned, ventured a random shot, and raised the offer to 'half-a-crown.' When shortly afterwards the purchase was knocked down to him for half-a-crown, however, he was infinitely surprised to find he had bought an up-country farm of 6,000 acres, for which he had no earthly use, at *half-a-crown an acre.*

The city of Pietermaritzburg, the seat of the Government of the colony, is very pleasantly situated. It stands upon a low, rounded, almost plain-like ridge, which runs with a gentle gradient down from west to east, and which has broad swelling and undulating

slopes passing off towards the port and the sea to the south, and a lofty wall of bold hills, just verging into mountains, enclosing it on the north. At the west end the ridge rises some feet above the town, at a distance of about a quarter of a mile from its boundary, and is there crowned by the military station of Fort Napier, a kind of barrack defended by an earth rampart. This work overlooks and entirely commands the town, but is itself dominated in turn by yet higher ground towards the north-west. The city retains exactly the same form of arrangement that it had when it was first laid out by its Dutch founders. It consists of eight parallel thoroughfares about 180 yards asunder and a mile and a half long, and these are crossed at convenient intervals by transverse streets of similar character, something more than a mile in length. The main streets are still known by their old Dutch names, Burger, Loop, Langmarkt, Kirk, Pietermaritz, Baum, Burg, and Greyling. But it is properly the blocks of land between the thoroughfares, rather than the thoroughfares themselves, which are distinguished bythese names. In the original idea the land between the thoroughfares was cut up into neat quadrangular blocks, which were termed Erven, and which contained nearly two acres each of ground. Every one of these four-cornered plots was considered to be the fitting and proper allotment for a citizen's town-house. In the outskirts and more retired parts of the town each house still stands as it was first built, in its own two acres of garden ; but in the more densely occupied districts the original erf has been divided and divided again, so that in some parts the buildings are in contact and continuous. This is most especially the case in the two principal and most central

streets, Church Street and Long Market Street. From the heights above, the town still wears, however, very much the aspect of a large garden besprinkled with residences, and just crystallising into compact brick and mortar nuclei here and there. From the summit of the town Hill, some twelve hundred feet above the city, there is a bird's-eye view of this character that is of exceeding magnificence and beauty. Until very recently open water-courses, fed from streams above Fort Napier, ran through all the principal streets of the town. These water-courses still furnish the supply to the houses, but they are gradually getting enclosed into covered conduits.

There are still some few of the original Dutch houses in Pietermaritzburg. These are one-storied structures, with regular rows of tall windows, balanced with stiff formality at either side of the central door, and looking out upon a raised platform, or stoep, having a seat at each end for the evening lounge and pipe. The rooms are for the most part lofty, with ceilings of planked wood. Buildings of two or three stories, and of a more solid and pretentious character are rapidly making their appearance in the more frequented parts of the town, and there are churches and chapels for the several denominations of religious faith; Roman Catholic, Episcopalian, Church of South Africa, Presbyterian, Reformed Dutch, Wesleyan, and Congregationalists. The Government-house stands in its own gardens at the western extremity of the town, looking pleasantly out to Fort Napier, and the last constructive effort has been the erection of a fine Court-house to supersede the old Hall of the Volksraad, which continued to do duty as a hall of judicature until it had nearly completed the suffocation of judges and advocates.

The gardens of Pietermaritzburg and of all the upland districts that are beyond the semitropical influence of the coast, are filled with an immense variety of cultivated kinds of fruit. The peach, nectarine, and apricot ripen splendidly as standards in the open air. One kind of peach known as the St. Helena peach, which is yellow, and with a firm fleshy pulp that clings to the stone, and that makes it as much like a plum as a peach, is in such incredible abundance that in some places pigs are fed upon the ripe fruit, and in old orchards the ground is at times almost paved with the stones of the drupes that have fallen ungathered from the tree. The loquat and the granadilla are produced in perfection, as are also the fig, medlar, guava, white mulberry, apple, pear, quince, raspberry, and pomegranate. The lemon is everywhere, and the orange in warm, sheltered spots like the valleys of Weenen. The almond and the walnut are common. The vine grows readily, but the grape requires some care and special skill in its management, on account of the too abundant rain of the time of the year when it ripens. Until very recently the strawberry would only produce its fruit in the most fitful and sparing way, but it is now abundant in the gardens about Pietermaritzburg, in consequence of some variety that is well suited to the climate and place having been introduced from one of the gardens of a missionary living beyond the frontier. The tomato thrives with incredible luxuriance. Amongst the vegetables that are more or less common in the gardens of the uplands must be named the pea, bean, eschalot, cucumber, pumpkin, vegetable marrow, yam, potato, turnip, carrot, parsnip, spinach, lettuce, cabbage, cauliflower, celery, radish, cress, artichoke, and

onion. It should also be understood that the gardens of the uplands are gay with flowers, in the sunshine of the winter, as well as in the summer. Roses blossom in great variety, one of them, a large white rose that grows on a luxuriant stem, easily trained into a lofty fence, being of great beauty. The oleander covers its thick evergreen shrub with grand clusters of flowers. The giant flowered brugmansia hangs out its massive clusters of bells, and makes the evening air heavy with its almost suffocating fragrance. Blue ipomæas cover low out-buildings with a perfect canopy of colour. Passion-flowers hang down from the stout boles of the blue gums. The many-hued verbenas keep the parterres bright with their almost endless succession of brilliant blossoms. The night-blowing cereus insinuates its delicately fringed floral tassels into the gloom of the deepening twilight. The golden willow of Australia, a flowering mimosa with bright yellow blossoms, but with lance-shaped foliage somewhat resembling that of the willow of England, turns every nook in which it is allowed to insert its roots, into a thick evergreen shrubbery, and not unfrequently splits itself asunder with the weight of its own too eager growth. It is said that another plant, the silver wattle of Australia, grows, when planted for firewood, with such rapidity, that each plant furnishes a ton of wood every five years.

The population of Pietermaritzburg consists of 3,200 Europeans, about half the number of native servants, and 100 Indian coolies also engaged in service. The white population is made up of the civil *employés* of the Government, the lawyers, professional men, merchants, shopkeepers, and artisans, and the families and dependants of these several classes. The 'great town'

is known to the natives as 'Umgungundhlovu,' and they hold that its origin was simply a removal of the 'great place' by the Dutch boers when they destroyed Dingaan's large kraal in Zululand, and founded their own capital in Natal. In the various up-country districts of the colony there are sundry little centres of settlement, or 'townships,' which are miniature reproductions, each in its way, of the capital town, and which are generally the seats of the magistrates of the several districts. The principal of these are Ladysmith, on the Klip River; Greytown, on a small affluent of the upper part of the Umvoti River; and Richmond, on the Ilovo River. Weenen, which was one of the favourite centres of the Dutch in the early days of their settlement, and which is placed on the Bushmans River, has ceased to be a magistracy in consequence of its being planted so much out of the way in deep close valleys; and the more convenient site to which the seat of the magistracy has been transferred, higher up on the river where it is crossed by the main road to the interior, has not yet grown into the dimensions of even a miniature township. With the exception of these places, there are no other concentrations and gatherings of houses that can be spoken of as more than village settlements of the most rudimentary type.

The circumstances of the coast districts of the colony are materially different from those of the uplands, in consequence of the fact that there the settler has the opportunity of engaging himself in the production of some kinds of valuable exportable produce, first and foremost amongst which stands sugar. The cane was introduced from the Mauritius in 1849, and grown in the neighbourhood of the Umhlali River. The first

sugar of Natal was manufactured by an old West Indian planter in 1850, the cane being crushed by a wooden roller hewn out of a ship's mast, and the juice being evaporated and concentrated in a common iron cooking pot. In the year 1852, Mr. Morewood, the planter of the first Mauritius cane, was crushing near the Umhlali River, by rude machinery driven by a horse, and was boiling his juice in a brick-built, iron-roofed shed erected for the purpose, which was thus virtually the parent sugar manufactory of Natal. At the last official return, there were 6,400 acres of land planted with the sugar cane, and 8,500 tons of sugar had been made, and 40,000 gallons of rum distilled during the year. This manufacture had been carried out by fifty-five mills driven by steam power and by nine mills driven by horses or oxen.

The sugar plantations of Natal are entirely confined to a belt of land that lies at a low level, and within from a dozen to twenty miles from the sea. The main coast road, both northwards and southwards, therefore, runs through the heart of these plantations. The most suitable land, however, does not extend continuously throughout the entire length of the coast district, but is scattered in patches, which are capriciously intermingled with unsuitable tracts, and which, therefore, require to be picked out with some technical knowledge and judgment. The cane, nevertheless, thrives quite as well upon the slopes of low hills as upon the actual plain. The chief localities that are engaged in the manufacture of sugar on the tract of coast north-east of the port are, the Umgeni Valley, the Compensation Flat, the Umhlanga and Umhloti, Victoria and the Tongaat, the Umhlali and Umvoti, and New

Guelderland, beyond the latter river; and in the opposite direction, the Isipingo, the lower Umkomanzi, and the Umzinto and Ifafa districts. Many of the mills which are now in operation in the colony are of large power, and of the most perfect construction and finish. There have been exceptional instances in which four tons of sugar have been made from an acre of cane, and there was a time when Natal sugar sold for 40*l.* the ton. The average yield of the plantations at the present time is stated to be about a ton and a half per acre, with a price varying from 17*l.* to 19*l.* per ton.

The natives in some measure take to the work of the plantations, and make useful hands when they can be induced to apply themselves continuously and steadily; but they are so obstinately averse to engagements for prolonged terms of service, and are so capricious and fitful in their habits where labour is concerned, that it has been found absolutely necessary to introduce Indian coolies for the cultivation of the plantations. These coolies are brought from Madras and Bombay, under engagements for five years' service, and at the expiration of their term are either sent back to India, or are allowed to settle in the colony. There were nearly 4,200 Indian coolies in Natal at the time of the last official return, and the sanction of the Secretary of State has recently been given for a material increase of their numbers.

The average yield of sugar upon thirteen well-managed plantations in Natal is found at the present time to be from one and a quarter to two tons per acre; the percentage of juice procured from the cane varying from 50 to 70; the density of the expressed juice, by Beaume's saccharometer, ranging from 7° to

11°; and the quantity of dry sugar yielded from each gallon of juice amounting to from one ounce to one ounce and four-fifths. The price realised for the sugar varies from 20*l.* 10*s.* to 21*l.* 15*s.* the ton, and the vacuum-pan sugar of one estate has realised 26*l.* the ton. It has been remarked that plantations near the sea have a considerably less dense juice than those which are situated further inland, the difference being in extreme instances so much that in one case 2,800 gallons of juice are required to make each ton of sugar, while in the other instance 1,700 gallons are enough.

The great advantage that the sugar planter has hitherto enjoyed in Natal has been the comparative cheapness of land, and the presence of a certain amount of very low-priced native labour. The cost of land, as a matter of course, has always borne an inverse ratio to its distance from the port. An addition of 35 miles has hitherto increased the cost of transport of the sugar as much as 2*l.* per ton. In the remote districts, towards the Tugela, or the Umzimkulu, land on this account can be had for 30*s.* an acre, which would cost 5*l.* an acre within a few miles of Durban. Sugar-land has, however, recently been sold within a few miles of Durban at prices varying from 13*l.* to 22*l.* per acre.

The chief drawback to sugar planting is the large capital that is required for the erection and maintenance of costly machinery. This has been one reason why planting has not been entered upon even more extensively in Natal. It has accordingly been proposed to meet this difficulty by the adoption of a plan that has been successfully employed elsewhere, and which consists in the erection of a mill to be used in common

by several small planters settled round. It is believed that this plan may be very extensively adopted in the colony, and the arrangements suggested by practical men as those which are most likely to be attended with a satisfactory result, contemplate the erection of a mill by the owner, or owners, of a sufficiently large estate, and the leasing of the surrounding land to growers, upon conditions which include the supply of cane to the mill. A planter of large experience in the Victoria county states that mills of this character should be calculated to manufacture from three and a half to twelve tons of sugar per day; that each planter should have from 150 to 200 acres of land, of which one-fourth, or at most one-third, is to be re-planted annually; and that the millowner should receive one-third of the sugar that he manufactures as the payment for the manufacturing, when the plantation is within eight miles of the port and when it is within one mile of the mill; but that the arrangement needs to be modified according to an easily determined scale when the mill is at a greater distance from the port, or when the planter has further to carry his cane. The scheme presumes that the cane is delivered to the manufacturer at the mill, and that he has the whole trash of the cane for fuel. It is calculated that after ample allowance for transport, planting, manuring, rent, and all other necessary charges, the planter's share of the sugar should return him at the very least a clear profit of 400*l.* a year, upon the manufactured produce of 50 acres of cane, and that he should be able to get a very good start under such a system, with a capital of from 800*l.* to 1,500*l.* Two other plans, for the establishment of central sugar-factories have also been

suggested. In one of these it is assumed that the owners of several small contiguous estates shall combine to erect a mill, which is to be worked for the general interest by a salaried manager; in the other, it is proposed that the proprietors of surrounding land shall grow cane for one central millowner. Under both these arrangements, however, greater difficulty would obviously have to be overcome than where the central millowner is also the proprietor of the land, and free to make his own arrangements with tenants for planting.

Coffee was first planted in the neighbourhood of Durban nearly twenty years ago. But the experiment was at that time looked upon as a curious and very questionable proceeding, and no particular attention was drawn to the matter for the next eight years. In the year 1863, however, there was a sudden rise in public estimation and confidence, and several plantations were speedily made. From the last official return it appeared that there were at that time close upon 4,800 acres of land planted with coffee in Natal, and that in 1873 the coffee crop gathered upon these amounted to nearly 754,000lbs., with a value for the actual export of 3,500*l*. Within the last three or four years, however, there has been a material check in the yield of the plantations and in the prosperity of the planters. Thus the value of the export of coffee in the year 1870 had risen to 7,500*l*. In the following year it was 5,600*l*; in 1872, 8,500*l*.; but in 1873, only 3,500*l*.; and in 1874, 3,300*l*.

Some well-qualified authorities in the colony incline to attribute the recent failures in the plantations to mistakes in the choice of ground, injudicious and erroneous methods of cultivation, deficient capital,

want of efficient labour, and accidental unfitness of season; and maintain that these are all circumstances which are to be successfully combated by energy, resource, and a larger experience. The general impression that seems to have been left from the investigation of the results, and from the consideration of the various elements that are concerned, appears to be that coffee has been, and may be, grown in Natal to a profit, but that the margin with success is too small to allow of mistakes or mismanagement, and that, ultimately, it will only be grown profitably by those who know well what they are about. What is principally nsisted upon is, that the land must be of inconsiderable elevation and within eight miles of the sea; that it shall consist of good chocolate loam, or of gritty gravel with decomposing fragments of shale; that the plant shall be efficiently sheltered from the wind by other plants of a character not grown for remunerative return, and, therefore, not exhaustive in themselves; and that the estate shall be effectually manured. A favourite mixture employed in Ceylon for this purpose, and consisting of 24 per cent. of organic matter, 36 per cent. of salts of phosphoric acid, 26 per cent. of alkaline salts, and of from 3 to 4 per cent. of carbonate of lime, is especially recommended, to be sprinkled on the ground, in the proportion of about four ounces to each plant, and then scraped in with the hoe. There is one peculiarity of the climate, which is dwelt upon as being unfavourable to coffee, and as therefore requiring to be very jealously watched by the planter, and to be met by counteracting expedients, namely, its *uncertainty*. Coffee especially requires an interval of rest after its berries have been plucked. In Natal

the early rains of late winter or of commencing spring, too commonly bring forward the blossom too soon, and expose it to the risk of being afterwards nipped by drought and wind. A very admirable little handbook, describing the culture and preparation of coffee in Natal, has recently been printed by Mr. H. E. Stainbank, one of the most experienced planters in the colony. The little volume is published by Mr. Stanford, of Charing Cross.

Arrowroot has been successfully cultivated on the coast districts in Natal for many years. It grows readily on land that is not good enough for either sugar or coffee; may be produced many years in succession from the same ground; is less affected by vicissitude of weather than almost any other crop; requires only rude buildings; needs care, rather than skill, for its manufacture; and is by no means exacting in the matter of capital. For these several reasons it was a very favourite crop with the earlier English settlers, and if it has not continued so up to the present time, it is mainly because the planters believe that they have found some more available employment for their energies and time. Arrowroot requires an ample supply of good running water for its manufacture, and is so delicate that it demands the most absolute cleanliness in every stage of the process, and even in its finished state is prone to be injured by accidental contamination after it has been packed on shipboard. It has generally been considered that a thrifty industrious man with a capital of 600*l.*, and 100 acres of suitable land, can make a very fair living by planting arrowroot. The yield should be about one-third of a ton per acre, worth 13*l.* As much as 9,000*l.* worth of arrowroot

has been produced in Natal in the year. The value of the year's export for the last return was 2,200*l.*

Tobacco can be successfully cultivated in Natal, both in the coast district and in the hill regions. It yields an entirely satisfactory return, but needs a good soil, is an exhaustive crop, and requires some skill and a great deal of attention. It is, however, unquestionably one of the subsidiary industries that may be drawn upon by farmers of energy and resource.

The cotton plant grows very readily and luxuriantly in Natal, and various attempts have been made to turn this circumstance to account; in no case, however, with a success sufficiently marked to establish cotton-planting as an accepted industry. In the year 1849 Mr. Chiappini, a Cape Town merchant, gathered 8,925 lbs. of clean cotton from a small plantation of twenty-nine acres, and sold it in England for fivepence a pound. In 1848 Mr. Bergtheil, well known in Natal for many years as an enterprising and energetic colonist, introduced, by his own personal resources, 200 German settlers to grow cotton, and settled them at the spot near Pinetown, which is now known as New Germany. Within three years twenty bales of cotton, weighing from 250 to 300 lbs. each, were shipped from this settlement and sold in Manchester for prices varying from sixpence to twenty pence the pound. The German settlers, however, then found more remunerative occupation in producing and carrying food supplies for the neighbouring community at the port. Sundry other efforts have subsequently been made, but with only similar negative results. Some bales have appeared amongst the exports every year since 1864, the value in each year varying between 2,200*l.* and 5,700*l.*, and having never

been less than the previous sum, excepting in the year 1874, when it amounted to only 1,100*l.*

Attempts have been made to grow flax in Natal, but hitherto without any remunerative result. The general impression regarding the plant seems to be that it is of too delicate a nature to be able to bear the sudden changes of temperature and moisture to which it is exposed in the climate of Natal. The New Zealand flax (*Phormium tenax*), which, however, is a day-lily, and not flax, is of a much hardier habit, and will, probably, before long be turned to good account in the colony. The surveyor-general, Dr. Sutherland, who has given considerable attention to its peculiarities, has been very successful in its cultivation, and is carefully completing his arrangements to test the possibility of manufacturing from it serviceable fibre. It is, perhaps, worthy of note that the aloes of South Africa, to which the Phormium in some respects approaches in its botanical affinities, also yield a considerable quantity of very tenacious fibre.

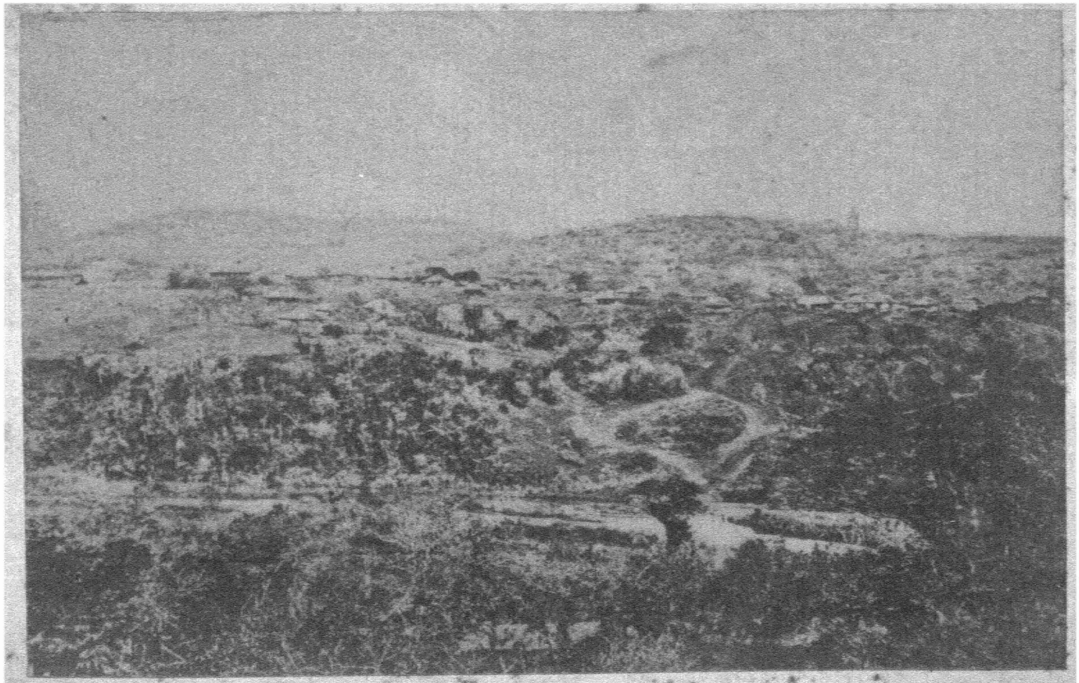
The gardens of the coast districts add some very important fruits to those which have been spoken of as being successfully grown in the more elevated regions of the colony. The pine-apple grows everywhere in the utmost luxuriance and in the highest perfection. The banana, with its clumps of broad plume-like leaves, and its heavy bunches of yellow fruit, is the ornament of every garden. The orange groves of the coast planters compare favourably on every ground with the well-known groves of Constantia, in the neighbourhood of the Cape. The Sesamum, which yields the Gingilie oil, and the earth-nut (*Arachis hypogeia*), a kind of bean which buries itself

in loose sandy soil as it ripens, are both grown by the natives of the coast. Both the sesamum and the earth-nut yield a very pure and valuable oil. Ginger and turmeric of excellent quality occur in the gardens. Natal cayenne is well known in England. The Messrs. Jameson of Durban have already made some marked progress in turning to practical account the various garden treasures of the coast. They now prepare preserved fruits, in considerable quantity, with the sugar of the colony. The small mandarin orange, or natji, the Cape gooseberry, the very curious amatungulu, the loquat, the guava, the pine-apple, and the shaddock are all excellent staples of their preserves; and the granadilla, and roselle made from the bracts of the *Hibiscus sabdariffa*, are occasional products that deserve to be generally known. They also compound a very choice and delicate curry powder, and make chutneys of delicious flavour from the banana, mango, and tamarind.

The town of Durban stands, as has been already stated, upon the sandy flat which intervenes between the mouth of the Umgeni River and the Inner Bay. It lies about two miles away from the landing-stage, which is immediately within the entrance of the sheltered basin of still water, and which, with its warehouses, wharves, and custom-house, is distinguished as 'The Point,' on account of there being there a low sand-point projecting out towards the entrance channel and the bluff on its further side. The landing-stage and wharves are connected with the town by a railway of a single line, which runs through a tangled bush growing out of the loose sand. The old block-house, which was occupied by the Dutch Boers

during the brief existence of the 'Republic of Natalia, still looks down upon the busy scene at the landing-stage; and the earthworks of Captain Smith's old stronghold are still dignified by the name of 'The Camp,' and used as military quarters, just outside of the town. The town itself has been primarily arranged in long parallel streets, cut up into regular quadrangles by intersecting thoroughfares, exactly after the fashion of Pietermaritzburg, but the names that are encountered speak more of the English occupation than of the Dutch origin. The designation of the town itself, Durban, is derived from Sir Benjamin D'Urban, a distinguished Governor of the Cape in past days. West Street refers not to the azimuthal point of the compass, but to the first English Governor, Mr. Martin West, and the 'Pine' Terrace was suggested, not by the pine-apples of the gardens, but by the first administration of the recent Governor, Sir Benjamin Pine. Smith Street is a memory of the Cape Governor, Sir Harry Smith; and Grey Street of yet another Cape Governor, Sir George Grey.

For many years the seaport town consisted of broad sand-encumbered streets, made up of low, thatched, one-storied houses and stores, and fringed on each side with syringa trees. The streets are now getting gradually hardened into permanent and traversable roads, and the buildings are rapidly assuming a more imposing and commodious aspect, and larger proportions. One somewhat recent improvement has been the laying out and enclosing a square reserved space in the centre of the town as a public garden, and the erection of a new court-house and public offices at one side of the quadrangle. There is also a very in-



MISSION STATION ON THE HILLS NEAR THE TOWNSHIP OF VERULAM, p. 307.
L. Reeve & Co., London.

tude of these restless little carriers passing unceasingly in and out, to wonder what happens to them when the rain comes down in water-spouts during some thunder-storm. In some way the ant-holes seem to disappear in the cold and the wet, and to re-open when the sunshine returns. There is possibly some organised service of opening and closing doors which is drawn upon at need—some system of water-tight fixings which makes the low-level channels and passages secure. The all but universal practice of placing considerable portions of the chambers of their nests high and dry above the level of the ground, and of covering them with an impervious glaze of 'hydraulic cement,' in the familiar form of 'ant-hills,' or 'ant-heaps,' in all probability has something to do with the expedients which the ant-engineers adopt to meet this difficulty.

'Ant-hills' occur in all directions over the country in Natal, rising in conical or oval-topped mounds two or three feet amidst the coarse grass. Some of the largest and boldest of them are the work of the white ant, but many of them are made by true ants. It is said that 'ant-hills' are most abundant in the 'sour grass' districts of South Africa, and least abundant in very dry and well-wooded districts. These ant-mounds are of spongy or cellular texture inside, and are so saturated with a kind of animal oil, that they will often burn like wood or coal. They get so hardened and baked by the strong sunshine on the outside that they are there converted into a kind of impermeable porcelain, and will sometimes even bear the wheel of a heavily-loaded waggon to come into contact with them, or even to pass over them, without breaking. The ant-bear, however, finds no difficulty in making

his way into them Large, scattered, fragments lying about the ground continually tell of his successful operations in this direction. His mode of operation is to tear open the mound on one side, leaving the *débris* of the disintegrated interior scattered along the ground, with irregular fragments of the outer hard shell mixed up with it. The material of the mound is, of course, earthy particles brought up from the soil by the ants, and cemented together by some secretion, prepared by the insect from the juices of its own body. The material of the 'ant-heap' is somewhat largely employed by settlers in the formation of plaster, mortar, and cement Kaffir pottery is almost entirely composed of it. The hard polished floor of the hut of the natives is ant-heap, which has been made into a paste with water, and then rubbed with flat stones after it has dried and hardened. Some of the tribes in the Mashuna district of the north appear to have used it in their rude operations for smelting gold.

White ants abound in Natal in some situations. These ingenious and subtle little workmen, however, are really not ants at all. They belong to the great natural family of the *Neuropteræ*, or nerve-winged insects, which contains the dragon-flies and myrmeleons. They live in societies, as is very well known, and the so called *Termites* which are encountered in tunnels and in nests, and which are the workers of the community, are properly the larvæ, or immature insects. Some of these larvæ are advanced into a somewhat more advanced stage of development than the ordinary range of the community, and put on larger heads and more powerful mandibles. These act as the guards, or soldiers, of the nests. The mature insect is winged,

but only wears its wings for an exceedingly brief interval, as it solely employs them for the purpose of swarming off from the nest. Of the mature insects there are many thousand males to a single female. The female, as soon as it is found by the working insects after a swarming, is imprisoned in a cell of hardened clay, which thenceforth becomes the foundation and centre of a new nest. The great distinctive peculiarity of the white ant is, that it constructs subterranean and concealed galleries from these nests containing this queen-ant cell, and conducts all its operations in the form of a masked sap. The subterranean galleries are formed of the same kind of hardened clay that constitutes the ant-hills, and when the white ants attack houses, these galleries are carried up to the base of the foundations, and then covered, and still concealed ways are cut through the timber, clay galleries being interpolated wherever the timber fails. In carrying on their advances to the rafters of a roof, they commonly tunnel through the plaster of the walls, in order to economise their own plaster, and when they do this they reveal their presence by making small holes here and there along the course of these channels, to allow them to turn out the excavated rubbish. They have great delight in any fibrous material of the nature of paper, which is so much more easily worked than wood. But when they avail themselves of substance of this kind they take away all the interior part, and leave the outer surface untouched, often strengthening it where necessary, to preserve its external aspect unchanged. In one case which fell within the knowledge of the writer, where a bundle of letters had been lying upon the mantel-

shelf of a fireplace, the wooden support of the shelf was tunnelled, the bundle of letters entered beneath, all their interior substance removed, and the edges carefully glued together, so that when the bundle was ultimately taken off from its place, with the intention of referring to one of the letters, the hollow case collapsed and crumbled up in the hand. Houses are sometimes injured by the gradual removal of their timber by these insects, so that floors, posts, and even roofs have to be renewed; but upon the whole the ravages of the white ants are not very active or serious. They do not like disturbance, and soon abandon ground that is occupied by civilised settlements and cultivation. There is one considerably larger kind of white ant which limits its depredations to thatch, and which constructs covered ways of clay to get into the thatch. The larvæ of this kind of ant are apt to drop from the thatch, and surprise themselves by their abrupt and unintentional appearance in broad daylight. These larger larvæ look unpleasantly like animated morsels of maccaroni, especially when, as may occasionally happen, they fall amongst soup plates upon a dinner table.

At certain periods of the year the mature insects of the white ant swarm, and at that time the ground all over the country is thickly covered with the insects crawling helplessly about, and dropping their wings from their shoulders at every step. Upon such occasions, birds, quadrupeds, and bipeds, all set to work to make the most of the opportunity, and it is an exceedingly infinitesimal proportion of the helpless wanderers that escape being devoured. The bipeds who assist in this immolation and feast are the Kaffirs,

who reckon the white ant an especial delicacy! The ground at these swarming times glistens with the abundant membranous wings that drop of their own accord from the insects.

Mosquitoes are now common in many parts of Natal. They are, as a rule, more troublesome on the coast than in the uplands. In some parts of the upland districts they are not known. In the first years of the occupation of the colony they were not found at Pietermaritzburg, but they are now naturalised there, although they confine their especial activities in that elevated region to the hottest season. Flies of various kinds are, as a matter of course, in considerable abundance. The formidable Tsetze, which commits such ravages amongst draught oxen by its bite, and which is a dipterous fly, is never seen in Natal, nor, indeed, within some hundreds of miles of its frontier. The ticks are in great variety and in some considerable force, and they also occur most abundantly along the coast. They are a kind of mite, or Acarus, furnished with a suctivorous beak, which has jagged teeth, or hooks, upon its outer surface, whereby it holds very pertinaciously to an animal's skin when it is once plunged in. The insects lie in wait upon grass and upon the leaves of low herbage, and transfer themselves to animals when these brush past. The larger of them are not of much consequence, because they are easily seen and removed. But there are some very minute kinds, which can scarcely be discerned by the unaided eye, which are exceedingly difficult to remove, and which occasion very distressing irritation. They attach themselves to the dress of persons walking through the

grass by thousands, and then get from the dress upon the legs.

A curious steel-grey slimy insect which infests the houses of colonists, is domestically, and too familiarly, known as the fish-moth, on account of its having a body shaped like a fish with a broad tassel-like tail, and of its taking the place of the moth in its ravages upon woven fabrics. Its slippery feeling is due to its thin skin being covered over with miscroscopic scales, and it is so soft that it is crushed into a speck of glistening moisture by comparatively slight pressure. It has no wings, but runs along with great rapidity, and slips and slides about like an eel when it is pursued. It undergoes no metamorphoses, and belongs to a group of insects which is distinguished by the entomologist as the Thysanurous family. The scales of its mailed armour are objects which are well known to microscopists as tests for the performance of some of the optical powers of their instruments. It is almost certainly a species of the genus Lepisma. It is nocturnal in its habits, delighting especially in dark closets, boxes, and drawers, and is very destructive to woven materials of all kinds, but most particularly affects old clothes, which it riddles into holes. It also attacks books and starched fabrics. Sir Emerson Tennent, in alluding to a precisely similar depredator in Ceylon, says that it is really carnivorous, and busies itself with the destruction of minute Acari that are the real perpetrators of the ravages which are attributed to the fish moth. This, however, is certainly not the case with the insect in Natal. It there unquestionably eats paper, and cotton, woollen, and silken fibres. The consumption of green baize used for the lining of

instrument cases goes on under the eye upon quite a wholesale scale. In the case of starched muslin fabrics the entire absence of all other forms of life excepting the fish-moths, while they are being riddled into holes, is capable of microscopic demonstration. But perhaps the most compromising proof of all is, that when they depasture amongst canvas-bound books, the hues of their half-transparent bodies assume the colours of the dye-stuff of the particular canvas—purple, red, or brown, as the case may be. The tenacity of life exhibited by these insects is quite as extraordinary as their indiscriminate voracity. They will remain alive in slippery wine-glasses, into which they have thrown themselves or fallen, and from which they are unable to escape, for months, without food of any kind

CHAPTER V.

INDIGENOUS VEGETABLE PRODUCTIONS.

THE indigenous vegetable productions of Natal are of exceeding variety, and of corresponding interest; first, on account of the moisture of the summer season, and then on account of the diversity of the climate, ranging from that of a semi-tropical hothouse or conservatory, on the coast, to that of an approximately cool and mountainous elevation, upon the higher hills. The coast district itself, before it was cleared for the sugar and coffee plantations, was one vast mass of trees and flowering shrubs, mostly with evergreen vegetation, opening out here and there into park-like glades, which were carpeted with luxuriant grass and flowers. In many parts of the coast this beautiful and teeming vegetation is still preserved. Wild bananas (*Strelitzia angusta*) and wild date palms (*Phœnix reclinata*) give quite a tropical aspect to the scenery of this region, such as is expressed in the illustration, which represents a group of these plants growing in a coast glade at Aliceville, on the Umzinto (Plate IX.). These Strelitzias bear a remarkable brilliant-coloured flower, shaped like the gaping bill of a bird, with a projecting tongue that looks like a griffin's sting. In other parts of the coast the large tree-euphorbia

H. Brooks. del.

Vincent Brooks, Day & Son, Lith.

GLADE AT ALICEVILLE

H. Brooks del. J. N. Fitch. lith.

EUPHORBIA CAPUT MEDUSÆ. p. 167

L. Reeve & Co. London.

(*Euphorbia grandidens*) presents a scarcely less startling and tropical appearance, with its bizarre upturned club-shaped branches of fleshy consistence, taking the place of leaves. This large euphorbia often rises out of, and above, a group of other trees, and occasionally assumes very considerable proportions. It yields, in common with all its tribe, an acid and poisonous white milky juice, which is most probably capable of being turned, nevertheless, to useful account, as it contains an elastic india-rubber-like gum. A patent has been taken out by a Natal colonist, Mr. G. Rolls, for preparing from it a preservative application for the defence of ships from the attacks of barnacles. A smaller but more picturesque species of the euphorbia, known as the *Candelabra Spurge*, grows abundantly on the rocky sides of many of the glens and ravines of the coast rivers, amidst the aloes and foliaceous evergreens, and gives them a very pleasing and altogether un-English appearance. The fleshy upturned branches of this spurge are tufted at the end, after the fashion of a candelabra of many sockets. These candelabra euphorbias are very well seen within four or five miles of the seaport where the coast road towards the north crosses the Umgeni river. The *Caput-Medusæ* euphorbia, which is very grotesque and curious, is found growing flat on the ground, like a little mat, at the edge of swamps. The strange aspect of its 'Medusa head' of flowers, in the midst of the environments of snake-like locks, is shown in Plate X.

There occurs in many places along the coast, generally in rather close neighbourhood to the sea, and commonly in situations where the Strelitzia and wild

date are near, a plant that possesses some pretensions to beauty as a shrub, but that is chiefly remarkable on account of its bearing a really valuable fruit, which is familiarly known as the 'Natal plum;' the native name of this plant is *Amatungulu*, and the botanical name *Arduinia grandiflora*. It is not a plum, but belongs properly to the Apocynaceous family of plants, which produces the vincas of the English hedge-rows. Its portrait, as it appears all along the immediate coast-region, is drawn in Plate XI. The plant has dark polished leaves, which glisten in the sunshine, and which are abundantly interspersed with large sharp bipartite spines. The leaves turn scarlet as they decay, but the plant being an evergreen, only shows fading leaves here and there. The blossoms are large star-like white flowers, something of the jasmine character, and possess a scent somewhat resembling the fragrance of the Gardenia. The fruit is at first of a lighter green than the leaves, and then turns, as it ripens, first orange, next scarlet and crimson, and finally dark purple or purplish lake. It ultimately grows to about the size of an Orleans plum, and has a milky juice. When perfectly ripe it is very refreshing, and of a peculiar, agreeable flavour, and yields a really curious and valuable preserve. It is, however, a berry, and not a drupe. It contains inside the succulent flesh dry seeds, and not a drupaceous stone.

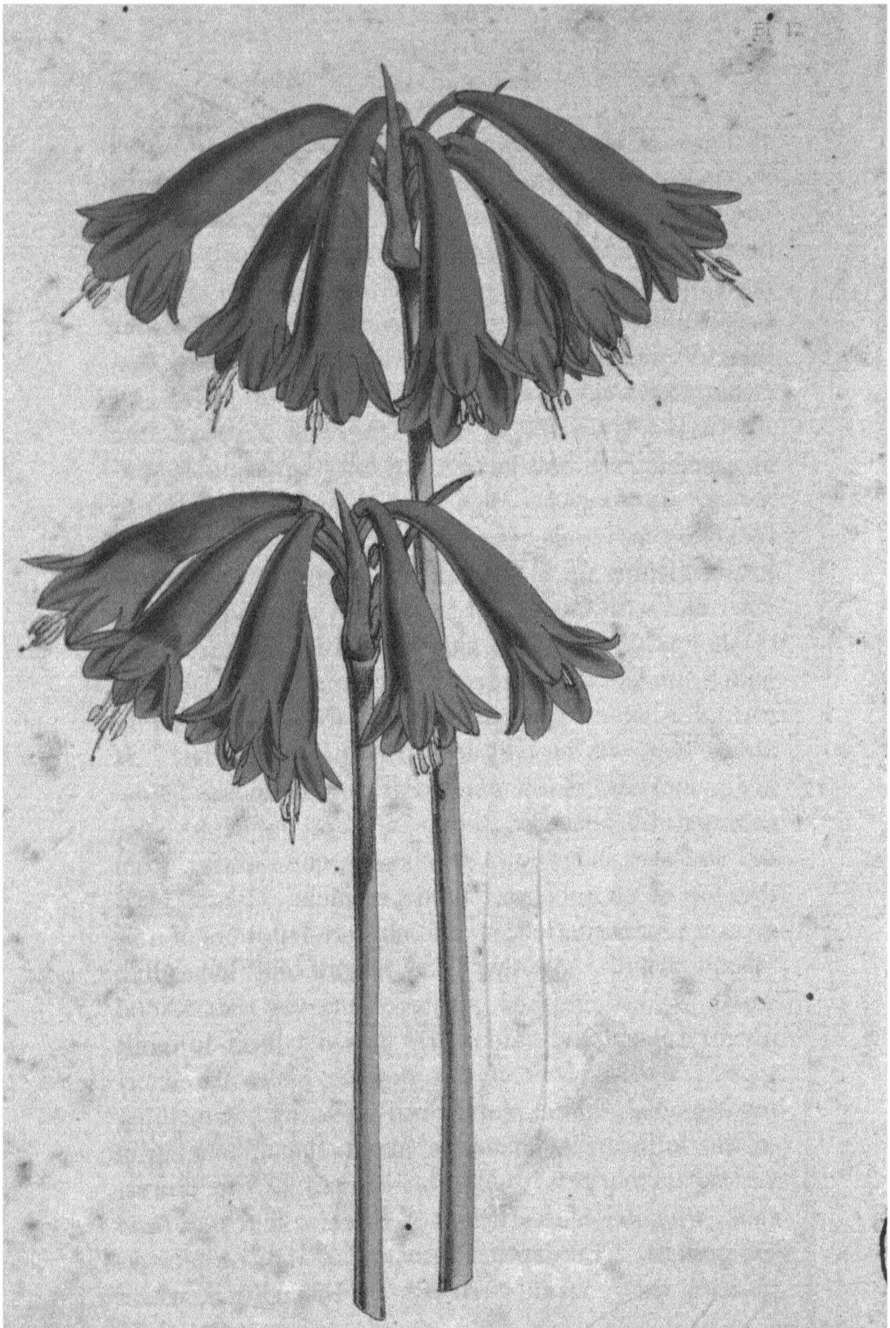
Some of the flowering shrubs of Natal are in full blossom in winter-time, and some, again, that are not evergreen, put forth their blossoms in gorgeous magnificence before they open out their leaves. The tree known as the 'Kaffir boom' is a notable instance of this. It is a leguminous plant (*Erythrina caffra*), with

H. Brookes del.

J.N. Fitch lith.

ARDUINIA GRANDIFLORA p 168.

L. Reeve & Cº. London.



H. Brooks del. J.N. Fitch. lith.

SCARLET CYRTANTHUS OR FLAME LILY p. 769

L. Reeve & Co. London.

clusters of large long flowers of the brightest red, looking in its leafless state as if a flock of scarlet birds had settled upon its light brown knotted branches. It belongs to a tropical family of shrubs which are remarkable for their bright red flowers, and which have been consequently designated 'coral trees.' This Kaffir boom is widely distributed throughout the colony to a distance of some twenty miles from the sea.

In the late winter, when the first rains of the approaching wet season begin to fall, the pastures commence also to clothe themselves with flowers. Daisy-like blossoms break out from the ground, having snowy petals opening up to the sun, with deep velvety purple eyes, and with crimson breasts. But the leading glory of the pastures at this time is a plant known to the Dutch under the expressive and most apt name of the 'fire-lily.' The pastures are frequently literally ablaze with its broadly spread carpet of scarlet. It is an amaryllid of the genus Cyrtanthus, and its flame-coloured blossoms, in themselves not unlike to large red fuchsias, hang down in clusters, cowslipwise, from the top of an otherwise bare peduncle. Plate XIII. gives a representation of the clustered flowers of this 'flame plant.' Another very magnificent amaryllid, which is distinguished *par excellence* as the 'Natal lily' (*Amaryllis belladonna*), presents itself in moist spots. The flowers of this notable plant are enormously large, white, pink-ribbed bells, with something of the lurid belladonna hue about them, hanging in vast heavy clusters round the summit of the flower-stalk, which rises to a height of three or four feet from the ground. Yet another remarkable and conspicuous plant of the Amaryllis tribe is an Hæmanthus, which

sends up from the grass a huge flower, composed mainly of a thickly imbricated mass of stamens, having the form and arrangement of a big 'painter's brush.' This Hæmanthus is known to the old Dutch settlers as the 'poison root.' The amaryllids are, indeed, of a poisonous nature throughout, and it should therefore be generally known that they can at once be distinguished from the true lilies, which are not poisonous, and which they so nearly resemble, by the fact that they all have the young ovary, or seed-case, below and external to the flower. The poison used by the bushmen to render their arrows deadly is procured from a species of Amaryllis. Yellow irises and gladioli of various kinds are found amongst the bulbous plants of the spring; but the Iris tribe is very delicately represented by a family of surpassing gracefulness, which would never be suspected by any but an experienced botanist to have anything to do with this rigid spear-leaved race. Pink and lavender hued bells are suspended from hair-like pendulous footstalks, resembling those of the English harebell, which blow about literally as hairs in the breeze. These stems, in some of the larger species, are five or six feet high, and the bright blossoms issue from dry membranous sheaths or bracts, which remain after the flowers are withered. Before the buds open out, the spikes of grey scaly bracts look exactly like the fructifications of a grass; and when the gay corollas open out from these, it is as if some pendulous wood-grass, like the Melica, had suddenly burst into bright flowers at the ends of its spikes. These elegant plants, on this account, are not inaptly termed 'flowering grasses' by the colonists not versed in

the mysteries of botanical lore. They are, however, properly 'ixias,' an aberrant group of the Iris tribe, in which the corolla of the flower, although still ternate in its parts, has ceased to present the trifid petaloid style, and has assumed a regular bell-shaped form. The Irideæ also contribute, besides the ixias, the iris, and the gladioli, several other gay-flowered genera, amongst them Sparaxis, Tritonia, Watsonia, Anomatheca, and Moræa. The three allied tribes of amaryllids, lilies, and irises, indeed, literally colour the pastures of the advanced winter and early spring with their gay and bright-hued progeny. It is these three allied families which properly furnish what are emphatically known as the South African bulbous plants.

A plant which seems to claim for itself some kinship with the larger irises of the 'yellow flag' form is one which is closely allied with the white arum, the lily of the Nile or the pig-lily of English greenhouses. This plant, however, is not in reality an arum at all. It is an orontiaceous plant (the Calla, or *Reichardia ethiopica*), distinguished from the arums by having perfect flowers instead of separated stamens and pistils upon its club-shaped rod. The Natal 'white arum,' however, has larger flowers than the English greenhouse plant, and these grow in vast bunches, comprising as many as twenty or thirty spathes, with their creamy white sheaths disclosing included thick clubs of gold, and with a frieze of dark green leaves, and an encircling girdle of crisp unopened buds in every stage of development, surrounding the cluster of opened-out flowers. There is also a smaller kind of this pig-lily

(the *Reichardia albomaculata*), with a dark chocolate-coloured centre to the white spathe.

Amongst plants worthy of notice which are prominent objects in the flora of the land, may be named two species of Osbeckia; the larger one (*Umlaasiana*) with fine purple flowers, the smaller (*canescens*) with lake-coloured flowers, deepened in the centre, and at the same time adorned, with a profusion of gold and pink stamens and pistils. *Acridocarpus Natalitius*—a climbing malpighaceous plant; *Littoma modesta*, which supports itself by tendril-like points of the leaves; *Lobelia tricolor*; *Rhamphicarpa tubulosa*, a scrophularaceous plant, something like the English ladies' smock; *Commelyna cœlestis*, a spider-wort presenting both pink and buff forms; and the blood-coloured *Anematheca cruenta*, are also worthy of remark. The genus Thunbergia, which belongs to the Acanthaceous family that supplies the acanthus leaf of the Corinthian capital, and that is in some sense of near kinship to the calceolarias and fox-gloves, furnishes some very beautiful flowers; amongst them those of the characteristic *Thunbergia Natalitia*, which is figured in Plate XII. Another very exquisite species of this genus has large delicate primrose-coloured blossoms, that have the knack of always looking fresh and clean, and as if opened on the instant.

The aloe is abundant in the colony, in some places covering the hillsides with its chevaux-de-frise of prickly leaves, and sending up large spikelets of flowers; there are several species of these essentially South African plants. There are also many thick-leaved Crassulaceæ and Mesembryanthemæ that bear considerable general resemblance to the aloe, the

H. Brooks, del.

J.N. Fitch, lith.

THUNBERGIA NATALITIA. p. 172

L. Reeve & Co. London.

latter producing brilliant red, yellow, or white flowers, which only open in the strongest sunshine, a habit from which the genus ('midday-flowering') acquires its name.

The earth-growing orchids are very varied and numerous, the handsomest amongst them perhaps being the *Disa polygonoides*, which shoots up its flower-spike like a dazzling rod of flame. *Disa Natalensis* is of the same form, but yellow-hued. *Habenaria tetrapetala* is a small-flowered orchid, but it is deliciously fragrant. *Satyrium militarium*, which is also white, is delicately tipped and splashed with rose pink. There is a *Crytoptera*, which is a slender tall-growing plant, appearing as if covered with yellow butterflies. *Brachycorythis pubescens*, also of tall growth, has blossoms of purple, pink, and white.

Amongst the most common of the flowers on the open pasture are an orange and crimson Leonotis, a labiate-flowered plant growing to the height of six feet; the dandelion-like Gazania; a pretty pink oxalis; and the blueish-grey *Pentamna variabilis*. The heaths, which are so abundant at the Cape of Good Hope that nearly 400 species have been described, are quite unknown in Natal; and the geraniums, of which there are 174 species about the Cape, stand almost in the same position, only a very few unimportant species having been found. The leguminous family yields in Natal various species of armed Mimosæ, or thorn-trees, and also several yellow-flowered Cassias. There is one remarkable plant of the Eumimoseæ sub-tribe, belonging to the genus Entada, which almost seems as if it might be the great original of Jack's bean-stalk: with a stem 18 inches or upwards in diameter, it climbs

the tallest trees, and spreads amongst their boughs to a distance of 100 yards, and even more ; and it hangs down pods 3 feet long and 4 inches broad, containing brown beans 2 inches in diameter. The notorious 'wait a bit' thorn (*wagt ein beetjie*), so named by the Dutch settlers because it is jagged at the point, and because it makes a rule of never parting again from any garment it once gets fair hold of, is, however, not a Mimosa, but a malvaceous plant, and a wild asparagus, above all things in the world (*Asparagus capensis*)! It is literally true of this plant that the rider who gets into its clutches, whilst disentangling himself from the thorns that have laid hold, is quite sure to find himself seized by a greater number, and is equally sure to leave many fragments of his garments behind him when he does get away. Many of the thorn-plants are so formidable that horses and cattle cannot face them. There are *doorn boom*, or thorn-trees that have spikes; and *doorn boom* that have *haeken doorn* (hooked thorns); and *doorn boom* that have *haak en steek doorn* (hooked *and* straight thorns). It is said that Dr. Kirk has expressively classified South African thorns as—(1) those which scratch the skin; (2) those which tear the flesh; (3) those which tear the clothes; and (4) those which tear both clothes and flesh. There is a 'sickle' thorn, that grows upon a runner-like shoot, which literally cuts into an animal's skin like a knife.

The large Composite family of plants is said to furnish as many as one thousand distinct species in South Africa. The aster-like flowers are often very beautiful. It is not unworthy of note that the genuine groundsel (*Senecio vulgaris*) and sow-thistle (*Sonchus*

vulgaris) of England appear among the thousand. Cape everlastings (*Siebenjahriges*), all species of *Helichrysmum* (*chrysos*, *helios*—'gold' and 'sun'), are in great variety and number, and of all conceivable colours—white, rose, yellow, and brown. Of these interesting plants there are some 140 catalogued at the Cape of Good Hope.

The Stapelias, or carrion-flowers, have succulent stems like the euphorbias, but they are all comparatively small plants, and may be at once distinguished by their lurid flowers, springing from near the root, and possessing an offensive odour, which attracts flies like carrion. With a few rare exceptions, they are also destitute of the milky juice of the euphorbias. They are in considerable number, and are common in the upper districts of the colony, where they are generally held to be of a repulsive and disgusting character—the toads, so to speak, of the floral domain. They are, nevertheless, of surpassing interest to the botanist. No two species agree in the form of the flower. Every one is different from its congeners, and each one is eminently remarkable and curious in itself. There is one in the Zulu country which bears a flower as large as a hat, and which is regarded with almost as much disgust and horror as a venomous serpent.

All succulent plants which yield milky juice, like the euphorbias, are known to the Dutch settlers under the expressive designation of *Milkbosch*. Of the true euphorbias there are probably scarcely less than 200 distinct species in Natal. By some botanists they have been estimated as forming not less than a twenty-fifth part of the entire flora of the Natal district.

The Cinchonaceous family of plants, which is one

of the largest of the natural tribes of the vegetable kingdom, comprising in itself not less than 2,500 species, and containing so many important plants that yield valuable productions—such, for instance, as Jesuit's bark and quinine, coffee and ipecacuanha—is in great strength in Natal, presenting as many as 100 species, of which some are of considerable interest; many among them, as in the case of the genus Gardenia, are notable for their beautiful flowers.

There is a scarlet Loranthus, a parasite like the mistletoe in England, which sometimes almost rivals the Kafir boom in the brilliancy of the colour it hangs out on the bare branches of the trees that it has fastened on. The bright colour is seated in the tubular calyx of the otherwise inconspicuous flower.

The Cucurbitaceæ, or gourds, are in considerable variety, and some of them very handsome. One of them, the *Gerrardissa megarhiza*, grows from an immense tuberous rhizome, two or three feet in diameter, lying on the surface of the ground. Several species of fine flowered Begonias have recently been discovered. There is one species of Capparis (*Capparis corymbifera*) which has large showy rosy-white flowers. An Oncobea, of the Bixad tribe, has handsome white flowers with yellow stamens. The *Oncobea spinosa*, which is considerably more rare, is especially interesting on account of its yielding a beautiful spherical nut, which is converted by the wild Kaffirs into snuff-boxes.

The true grasses are very numerous in Natal, as they are almost everywhere. Many of them constitute fine pasture. Some of them are cultivated by the Kaffirs for their grain, the chief amongst these being a millet,

teresting botanical and horticultural garden, fifty acres in extent, on the sand flat, about a mile away from the town, at the base of the Berea hill. The population of Durban consists of very much the same elements as that of Pietermaritzburg, with the exception that the official part is largely replaced by a mercantile class, and that more of the families reside in the suburbs instead of at the principal place of business in the town. The population of Durban at the last official return was estimated at 3,600 white people, 2,300 native servants, and 660 Indian coolies. It will, therefore, be observed, in passing, that 7,000 out of the 17,000 white inhabitants of Natal are contained within the two principal towns.

There is only one township settlement on the coast which is at all worthy of the designation, that namely of Verulam, which stands in the midst of bold hills, on the Umhloti River, not far from its mouth, and about nineteen miles from Durban. Plate 15 gives a very good idea of the character of the coast-hills in this part of the colony. It represents the hills looking immediately down upon Verulam, with the native houses of the Wesleyan mission station, which is one of the most thriving in the colony, scattered upon their sides, and with the main road of access to the station coming down to the drift, or ford, of the river Umhloti. The Kaffir foot-paths, which form the short cuts up to the houses from the road, appear scoring the hill-sides, and the thin natural bush of the hill-tops is seen above the terrace occupied by the dwellings. Verulam itself, which lies at the foot of these hills, is the seat of the Inanda division of the magistracy of the county of Victoria. There are incipient aggregations of houses

in some other districts, which are convenient to the more flourishing plantations; but it will be readily understood how small these must yet be when the following numbers are looked at, as giving the sum of the white population of the *entire* divisions that are next in importance on the coast to the Inanda division. The numbers stand for the Tugela division of Victoria, 591; for Alexandra county, 404. The numbers for the entire Inanda division of Victoria are 957, and for the small *county* of Durban, comprised between the rivers Umlazi and Umgeni, and extending a little above Pinetown, 1448. The county of Pietermaritzburg contains 2,446 white settlers, the county of Umvoti 1,350, the county of Weenen 984, and the county of Klip River 1,937. Of the entire white population of Natal, 10,000 therefore belong to the up-country districts, and 7,000 to the coast.

A very excellent idea of the general character of the coast district of Natal is furnished by the county through which the high road from the port to the interior passes, until it reaches the village settlement of Pinetown, twelve miles inland. The road first ascends the sandy range of the Berea for a climb of something more than 300 feet, which until recently was a very formidable pull for the wagons, their wheels being often half sunk in loose sand. A hard road has now been made up this sand waste at very considerable cost. It is bordered on either side by the dense bush, which clothes the Berea everywhere; and wherever a cottage appears in a small clearing by the way side it is almost overgrown by flowering shrubs and gay flowers, amongst which appear conspicuously roses, bougainvilleas, alpineas, brugmansias, poinsettias, and

large blue ipomœas, that sometimes go far towards covering the building with a continuous cloak of blossoms. The bush itself consists of wild figs, acacias, and evergreen shrubs, festooned with the scarlet-trumpeted *Tecoma capensis*, and with purple and pink blossomed convolvuli. The road dips for a little way from the crest of the Berea, and then begins to ascend again, until it soon gets into a country of hill and dale, with exquisitely beautiful backward peeps at the sea, between the breaks of the hills, and with a general aspect that very strongly recalls to mind some of the most choice parts of South Devon. Every good site is occupied throughout this part of the route by a small homestead, and on either hand there are beautiful sheltered and well-wooded ravines, that are not seen unless the road is left, but which are then found to be marvels of sequestered and picturesque beauty. A characteristic instance of this occurs in the valley of the Palmiet River, near Westville, and about eight miles from Durban, a portion of which is sketched in Plate I., serving as Frontispiece. The stream here winds through a ravine that is bounded on either hand by what are technically known as 'krantzes,' that is, steep bare walls of rock shooting up perpendicularly 200 and 300 feet high, like the walls of old battlemented castles, embrasured with holes and grey with lichen. Vultures, and hawks of quite eagle dimensions, make their nests in these rocky fastnesses, and fleck the azure sky above as they circle round and round in their soaring flight. The tops of the rocky walls are ornamented with the blossoms of the blue agapanthus, and the slopes under the battlements are prickly and chevaux-de-frized with big aloes that bear spikes of scarlet flowers more than

a foot long. The moist, shady nooks and crevices of the rock are draped with choice delicate ferns and achimenes-like plants; and the brilliant green foliage of an almost metallic lustre, in less sheltered places, is festooned with climbing plants, and gay with the bright blossoms of thunbergias, ipomœas, and clematis. The damp sandy margin of the stream is impressed with the footprints of antelopes, small monkeys, and wild cats, that keep close in thickets and caves during the day, but that resort to the water in the still night. Kingfishers of gorgeous plumage flash out across the wanderer's path, 'like winged jewels,' and seize some too careless loiterer in the stream. There are two kinds of fish in this river, somewhat resembling the English chub, one with silver, and the other with light yellow, scales, and that grow up to 3lbs. and 4lbs. to tempt the angler; and there are also excellent eels, weighing 4lbs. and 5lbs. apiece. Miniature waterfalls and boulder and rock-encumbered rapids in every variety are encountered in this and neighbouring streams. Almost every river along the coast has its own tracts of picturesque scenery of this character.

Pinetown, which is four or five miles beyond the situation of the Palmiet, is a flat sandy valley nearly 1,200 feet above the sea. The road is tracked through what seems little else than a sand waste, suggesting at first sight the idea of hopeless barrenness. But the landscape on either hand is nevertheless dotted over with houses embowered in gardens where gracefully drooping bamboos are diversified with broad-leaved plantains and bananas, stately gum trees, and golden-fruited oranges. In the very heart of the luxu-

riance of this place there is one settler's farm which is conspicuous for its orange grove and for its waving bamboos, but which is also notable for the fact that its thriving owner was one of the first growers of arrow-root, and that with a most unusual constancy and perseverance he is a grower and manufacturer of arrowroot still, and still finds that it yields him a remunerative return. He now, however, adds materially to the income which the arrowroot yields, from the bamboo groves which furnish whip-stocks, and from oat-forage, maize, potatoes, pine-apples, and oranges.

Pinetown virtually stands upon the limits of the luxuriant coast region. Immediately upon leaving it, the road climbs a hill 600 feet high and the altogether different country and climate of the uplands is entered upon. The air is there bracing and comparatively dry, and the vegetation infinitely less luxuriant. The banana and the pine-apple disappear, and the aspect of the surface is changed into bare, broadly swelling downs, broken at occasional intervals by rugged masses of granite and trap, which the road has to get through as it can by availing itself of narrow rock-cut passes, sometimes with vast boulders overhanging them on the steep hill-sides.

In the close neighbourhood of Pinetown there is a place which possesses a considerable interest of its own in a historical sense. Just off the main road where it passes through the sandy valley, on the right or eastern side, and hidden from sight until a slight ridge of ground is surmounted, there lies the somewhat remarkable settlement of New Germany, consisting of a considerable number of small, comfortable-looking

homesteads, grouped round a large chapel. This is the settlement which was founded by Mr. Bergtheil in 1848. At that time he brought out from Bremen thirty-five families of poor Germans, consisting of about 200 individuals, in a vessel called the 'Bertha.' These people were all settled upon this spot, and each family received there a small allotment of land, a plough, some oxen, and a cow, a certain quantity of building material, and food for a limited time. The original design of the settlement was that they were to grow cotton; this idea, however, was not persevered in, and after ten years of hard steady work the fortunes of the little community looked gloomy and sad. They had then contracted large debts and responsibilities to the founder of their settlements, and saw small means of clearing themselves from this load. Mr. Bergtheil at this time called them together, forgave them their debt, and proposed an arrangement by which they should become purchasers of their several holdings, by paying from fifteen to thirty shillings an acre for them, by means of instalments, spread through a term of ten years. The actual result was that in three years almost every tenant on the estate had cleared his farm of debt, and was the owner of his own homestead; and in 1865, when the writer of these lines last saw the little settlement, it was in a state of thriving prosperity, and many of its members could show property amounting to 800*l.* and 1,000*l.* There is now a substantial chapel standing in the heart of this interesting community, which has been erected by its own people, at a cost of more than 1,000*l.*, and not the least notable stone in the fabric is one which bears a Latin inscription, recording that it covers an iron safe containing a 'History

of the introduction of the Germans, by Dominus Bergtheil, in 1848.'

Probably the most telling form in which the industrial history of a young community like Natal can be presented to the inquirer who desires to know the actual character and progress of productive effort is that which is furnished by the return of its exports from year to year. A very elaborate and complete statement of the value of the different kinds of articles exported from Natal during a period of thirteen years has been drawn up in a tabular form by the Hon. F. C. Drummond, who has given an unintermitting attention to the growth of the industries of the colony during some years. It should be borne constantly in mind, while considering the facts which are prominent in this statement, that in the year 1862, when the records of the table commence, there were only 13,000 white settlers in the colony engaged in the work of productive industry and trade; and that in the last year of the series there were scarcely more than 17,000; that during that period there had been vicissitudes of fortune, and for some time actual stagnation and embarrassment, amongst the mercantile ranks of the community; and that, nevertheless, the annual value of the trade of the colony during those thirteen years rose from 576,000*l.* to 1,891,000*l.*; and that during the whole period of thirteen years there were only two years in which the value of the exports was not in a steadily increasing ratio. From the detailed statements in this tabular return the following very interesting facts are gleaned:—

Value of the Principal Exports from Natal by Sea during the years:—

	1862	1863	1864	1865	1866	1867	1868	1869	1870	1871	1872	1873	1874
	£	£	£	£	£	£	£	£	£	£	£	£	£
1. Arrowroot	1,547	2,801	2,848	3,943	5,744	9,139	5,501	4,684	4,696	3,858	5,647	1,435	2,226
2. Grain .	4,970	9,008	708	846	7,511	7,624	10,022	2,328	1,219	5,022	853	845	1,243
3. Butter .	11,381	8,204	5,650	3,395	11,114	8,056	6,842	8,503	7,298	4,719	5,178	4,509	963
4. Hides .	5,514	6,431	4,783	6,236	5,471	5,154	9,501	20,788	23,867	32,663	41,124	50,117	82,473
5. Skins .	728	1,315	2,083	1,942	1,052	2,559	16,117	24,915	45,275	63,975	91,469	85,809	70,688
6. Ivory .	27,059	40,736	26,254	19,154	6,673	5,908	8,077	10,449	12,051	12,140	9,022	17,168	8,580
7. Ostrich Feathers	2,510	7,255	6,972	11,299	10,921	11,200	8,839	4,757	6,364	6,910	9,745	5,940	3,138
8. Bacon and Hams .	183	124	3	—	1,672	4,106	6,599	9,159	5,715	3,076	1,180	1,078	100
9. Coffee .	—	—	—	—	—	—	2,425	5,011	7,512	5,675	8,516	3,507	3,348
10. Rum .	—	—	—	—	—	—	300	1,364	2,051	2,182	1,227	736	1,391
11. Cotton .	62	832	2,646	3,984	4,699	4,902	2,263	2,301	3,479	5,763	5,400	4,379	1,165
12. Sugar .	21,178	26,153	94,208	76,355	66,191	70,563	90,387	145,711	111,023	180,496	153,855	161,840	159,079
13. Wool .	38,432	48,526	61,720	66,747	71,433	80,999	91,630	105,544	120,778	172,806	254,495	253,170	338,936
14. Sundry Exports	13,664	6,180	12,312	16,353	10,921	15,461	13,476	17,748	31,651	62,824	35,086	54,548	90,939
Total .	127,228	158,565	220,267	210,254	203,402	225,671	271,949	363,262	382,979	562,109	622,797	651,028	769,986

It will be understood that the chief portion of the value of skins, ivory, and ostrich feathers, and a considerable portion of the value of wool, relates to produce received from the interior, and shipped in the colony, and is, therefore, a matter of colonial trade, rather than of colonial production.

If four-year periods are taken for the two most important exports, sugar and wool, it appears that the quantities exported from Natal in each of these periods during twenty years was—

	1854–1857	1858–1861	1862–1865	1866–1869	1870–1873
Sugar, in tons .	52	2,385	10,112	18,947	28,231
Wool, in pounds	644,254	1,603,769	5,130,870	9,711,080	21,340,489
Sugar and wool in value .	£ 31,425	£ 158,848	£ 433,139	£ 722,458	£ 1,408,464

For the twenty years from 1854 to 1873 the quantities were—

Sugar . . . . 59,626 tons
Wool . . . . 38,491,062 lbs. } Value . £2,754,514

For the year 1874 the quantities were—

Sugar . . . . 6,833 tons
Wool . . . . 7,888,794 lbs. } Value . £498,015

For the harvest of 1875 it was considered that the actual yield of sugar was 10,000 tons, of which 7,800 tons would be for sea-export, and 2,200 tons for home consumption and ordinary trade.

The value of imports into the colony for the same four year periods was—

	1854 1857	1858–1861	1862–1865	1866–1869	1870–1873
	£	£	£	£	£
Liquors . .	46,199	90,973	173,932	78,573	151,067
Groceries .	62,723	99,130	180,101	88,281	99,371
Bread Stuffs .	28,596	77,238	159,093	107,888	126,786
Total for food	137,518	267,341	513,126	274,742	377,224
Clothing . .	174,739	385,434	588,268	534,059	1,166,377

For the entire twenty years from 1854 to 1873 the values were—

Liquors	£540,744
Groceries	529,106
Bread Stuffs	499,601
Total for Food	1,569,451
Clothing	2,848,897

For the year, 1874, the values were—

Liquors	£66,758
Groceries	41,564
Bread Stuffs	68,983
Total for Food	174,425
Clothing	414,646

The value of trade, including both imports and exports, for the same four-year periods was—

	1854–1857	1858–1861	1862–1865	1866–1869	1870–1873
	£	£	£	£	£
Imports . .	496,104	1,130,425	1,969,694	1,230,648	2,738,688
Exports . .	234,794	469,907	716,314	1,064,284	2,218,913
Total of imports and exports .	730,898	1,600,332	2,686,008	2,294,932	4,957,601

The value for the 20 years from 1854 to 1873 was—

Imports	£7,575,559
Exports	4,704,212
Total	£12,269,771

For the year, 1874, the value was—

Imports	£1,121,948
Exports	769,988
Total	£1,891,936

Amongst the sea exports for 1874 there occurs for the first time (produce of the Transvaal States), Gold Bars, 24,710*l.*

The one influence which has been operative beyond all else in retarding the industrial advance of Natal has obviously been the cost and uncertainty of transport.

Hitherto the carriage of all goods has been effected by waggons, carrying loads of from 3 to $5\frac{1}{2}$ tons weight, drawn by teams of from twelve to eighteen oxen, upon roads that are little more than tracks worn by traffic, with occasional short cuttings on the hill sides. The cost of the traffic by this means—

For 54 miles, from the port to the capital, is £5 per ton.
For 230 miles, from the port to Newcastle towards the northern frontier of the colony, is £20 per ton.
For 473 miles, from the port to the diamond fields on the Vaal river, is £42 per ton.

The average of these rates amounts to 1*s.* 9*d.* per ton per mile; something like twenty times the amount of heavy transport by railways in England.

In the face of this great difficulty, and of the very large development which, notwithstanding its prejudicial influence, trade representing a value approaching to two millions sterling per year, has now attained, a survey for a trunk line of railway from the port quite through the colony to the northern frontier, and to the coast plantations in both directions, has recently been made. The country through which this survey has had to be carried is somewhat a difficult one, being everywhere sculptured with ridges and valleys. This is so marked that in a survey of 347 miles it was ascertained that that there would have to be 589 viaducts, bridges, and masonry culverts. Nevertheless it has been found to be quite practicable to traverse the whole of this distance by a single line, at no extravagant outlay, with gradients that will in no case exceed one in thirty in steepness, with curves which will nowhere be sharper than circular arcs of 300 feet radius, and with bridges which will be everywhere five feet above the highest flood line. To accomplish this there will have to be some short tunnels, some cuttings 170 feet deep, and some embankments 60 feet high. The main line attains a height of 2,373 feet at thirty-six miles from Durban, then falls 294 feet, and afterwards crosses the highest level between the sea and Pietermaritzburg, at a height of 3,037 feet, near New Leeds. It next falls nearly 1,000 feet to the city, ascends 1,700 feet in four miles, descends 1,500 feet to cross the Bushmans River, and finally reaches the Drakenberg, near Van Reenen's Pass, after traversing 280 miles.

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